SOCIETY AFFAIRS

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Items of Interest*

Conspiracy Charges Involving War Contracts Dismissed

About December, 1922, indictments were filed against Benedict Crowell, formerly Assistant Secretary of War, and others, charging conspiracy in connection with war contracts. This case had dragged through more than a year, meanwhile leaving the names of those accused under a cloud, until January, 1924, when by a sweeping decision, the demurrers of the defendants were sustained and the case was thrown out of the Supreme Court of the District of Columbia.

Practically the only charge involved conspiracy to defraud by neglect to follow work through the regularly constituted governmental procedure, such as the use of the "cost-plus" contract and elimination of competitive bidding as applied to war construction. The decision concludes:

"The Court is of opinion that while the indictment abounds in the statement of conclusions, it fails to support the same by facts alleged as required in a criminal pleading; and, furthermore, it is sought herein to obtain a judicial review of the policy adopted by the Secretary of War concerning the war emergency building construction program of that Department, throughout the period of the late war; and that too in the absence of fact allegations that would make such review proper; even assuming, but not hereby deciding, that the question is one open to judicial review.

"Even if the order of the Secretary of War, of April 12, 1917, may properly be construed as limited in application, as insisted upon herein by counsel, notwithstanding the plain and unambiguous language of the order itself; as

* Members are urged to contribute items of general interest.

well, also, if, notwithstanding the official adoption and approval by the Secretary of War of the cost-plus form of contract, a court and jury, nevertheless, may supervise and even reconstruct the terms and provisions of such form of contract; the Court is of opinion that the indictment as drawn is not such as that the defendants could advisedly plead thereto in the sense of knowing just what they are called upon to answer, nor what is intended to be proved thereunder.

"Accordingly, the Court is of opinion, and so orders, that the demurrers filed herein be, and the same hereby severally are, sustained."

Although couched in dignified legal phraseology this decision in effect implies a serious arraignment of the action of the United States Department of Justice in handling the matter. Engineers may well rejoice in the vindication, though tardy in the extreme, of their part in the civilian activities during the World War; the remaining issue becomes that of combatting the methods used for discrediting the profession. In both these matters, the voices of engineers, individually and collectively, should be heard in unequivocal terms.

Formation of American Society of Engineers

The formation of the "American Society of Engineers" in the State of Illinois has been brought to the attention of the Society by several members of the American Society of Civil Engineers. This Society's Counsel has been asked to write to the American Society of Engineers, 3510 Clinton Avenue, Berwyn, Ill., calling attention to the fact that the name of the American Society of Civil Engineers has been in existence for more than seventy years, and, as there is a possibility of confusion in the names, this Society protests the adoption of a name so nearly like its own.

Among the personnel of the Directors and Committees of the new Society, which it is stated was "Founded A. D. MCMXII; a legally organized Corporation not for profit, under the laws of the State of Illinois * * *," there is no member of the American Society of Civil Engineers, so far as a recent circular indicates. Apparently, the new Society, to the extent to which it receives support, will duplicate the work of other Engineering Societies.

Twenty-Fifth Anniversary Meeting of American Railway Engineering Association

This year's Annual Meeting of the American Railway Engineering Association, held March 11-13, 1924, in Chicago, Ill., was significant in marking the twenty-fifth milestone in the Association's enviable history. The meetings were widely and enjoyably attended; much interest attached to the consideration of Committee reports scattered over the three days. As one side issue of the Convention, the National Railway Appliances Association staged an exhibit of Railway Appliances at the Coliseum which evoked much favorable comment. The crowning feature of the social program was the Annual Dinner at the Congress Hotel, March 12, 1924.

Railroad Program for 1924 in Relation to the Past Year's Experience

A valuable summary of recent railroad statistics and a program for transportation activities during the coming year, appears in a recent report of the American Railway Association.

In this report the following facts are noted regarding accomplishments for the first three quarters of 1923:

Car Loading.—(42 Weeks.)—The total is almost 41 000 000, which is the largest traffic ever handled by the railroad in a similar period and which exceeds the record of 1920 by about 10 per cent.

New Equipment.—The total of about 155 000 new freight cars and about 3 000 new locomotives is the best during the past ten years. The total of about 65 000 cars and 1 200 locomotives remain as unfilled orders.

Capital Expenditures.—The amount of $1 300 000 000 which includes that carried over from 1922 and authorized up to October 1, 1923, exceeds any record of previous years.

Tons Loaded per Car.—The average of 28.2 is better than that of 1920 which was the record year.

Miles per Car per Day.—A record capacity was maintained during 1923, the average being 27.6.

Cars of Revenue Freight Loaded Weekly.—All Commodities.—The performance for 1923 exceeded consistently all years since 1920 and reached its maximum of about 1 100 000 in September.

For 1924, it is proposed to continue the creditable record of locomotive and car repairs; to increase the efficiency in car loading by co-operation with shippers to prevent underloading; to stimulate carload shipments, and, in conjunction with the Regional Shipper's Advisory Board, to determine by analysis the possibility of co-operation between producers, consumers, and railroads to obtain greater efficiency; to better the record for car movement; to study the possibilities of greater joint use of facilities by railroads; to keep the public and patrons informed of railroad progress; and to attempt to give adequate transportation service under continued fair regulation.

Spring Meeting, Atlanta, Ga.

The Spring Meeting to be held in Atlanta, Ga., April 9-12, 1924, promises to be one of the most interesting and instructive sessions in the history of the Society.

The economics and the operation of hydro-electric power developments, the influence of railroads on industrial development, highway and water supply problems, all of which will be discussed, offer a wide and important field in which the country at large is interested.

In addition to a highly attractive technical program, the local engineers of Atlanta have arranged interesting social events and sight-seeing excursions. Atlanta has many points of scenic and historic importance, probably the best known and most widely discussed being the mammoth Confederate Memorial now being sculptured on Stone Mountain.

Few engineers who attend the meeting will fail to take advantage of the two-day excursion, arranged through the courtesy of the Georgia Railway and Power Company, to its hydro-electric developments in Northern Georgia.

The details of the technical sessions, social features, and excursions have already been mailed to the membership in the final program of the meeting.

Donations for Meiji University Library, Tokyo, Japan

The Society is in receipt of a letter from the Meiji University Library Committee, New York, N. Y., which states, in part:

"Meiji University, situated in the heart of Tokyo, suffered heaviest of all the colleges and universities affected by the earthquake in September. It was completely destroyed by shock and fire. But the blow they feel as most severe was the total loss of their library, containing sixty thousand volumes in all languages. Classes now being held in temporary quarters are handicapped by the great lack of books. Foreign books it is almost impossible to secure, as the dealers, with their main offices in Tokyo, suffered heavily in the disaster.

"The University is appealing in her extremity to friends in foreign countries. The librarian, T. Fujimori, writes: 'Already your country and people have given freely and most generously a wonderful aid and succor unprecedented in the history of civilization. No language is enough to express the feeling of gratefulness and the sense of obligation that fill our hearts to-day for your sympathy and generosity thus shown. They will remain and continue to cement the friendship more and more between the American and Japanese peoples. We do not wish to allow ourselves to take undue advantage of your magnanimity. However, face to face with a situation such as above stated, we feel justified to appeal once more to your generosity and material aid.'

"The Meiji Library Committee has undertaken to bring this situation before the various cultural organizations in this country, suggesting that each member contribute one or more books from his own library, dealing with history, political science, economics, sociology, psychology, sciences, law, rhetoric, philosophy, and standard books of literature. College textbooks will be most welcome."

It is suggested that members interested may help this worthy cause by sending immediately such material as their generosity may provide. Contributions may be sent for forwarding, to J. Aneha, Care, Hopkins Company, 18 Old Slip, New York, N. Y., in which case a letter regarding the contents and destination should be addressed to Mr. Aneha, Japanese Consul-General, 165 Broadway, New York, N. Y.; or by parcel post direct to Meiji University Library, in packages of not more than 4½ lb., marked "Books only" to avoid customs papers.

Variety of Society Papers

The Award of Medals and Prizes at the recent Annual Meeting of the Society calls attention to the diversity of papers and discussions published by the Society. F. W. Peek, Jr., M. A. I. E. E., received the Thomas Fitch Rowland Prize for a paper on "High Voltage Power Transmission". James F. Sanborn, M. Am. Soc. C. E., was awarded the J. James R. Croes Medal for a paper on the "Engineering Geology of the Catskill Water Supply", Charles P. Berkey, Professor of Geology, Columbia University, being a co-author of the paper.

The other Prizes were awarded for papers more strictly in the field of civil engineering, but even so covering a variety of subjects, such as "Locomotive Loadings for Railway Bridges" for which D. B. Steinman, M. Am. Soc. C. E., was awarded the Norman Medal; "Experiments with Models of the Gilboa Dam and Spillway" for which R. W. Gausmann, M. Am. Soc. C. E., and Charles M. Madden, Assoc. M. Am. Soc. C. E., were awarded the James Laurie Prize; "Analysis of Cost of Freight Service, Grand Trunk Railway Company, of Canada" for which J. P. Newell, M. Am. Soc. C. E., was awarded the Arthur M. Wellington Prize; and "Lateral Earth Pressure" for which Jacob Feld, Jun. Am. Soc. C. E., was awarded the Collingwood Prize for Juniors.

It will thus be noted that not only does the scope of these valuable contributions include the fields of electrical and mining engineering, but also those of more legitimate, civil engineering interests, likewise extensive in content.

International Cement Congress

A gathering of those interested in the use of cement throughout the world is to be held in Olympia, London, England, April 22 and 23, 1924. According to present plans, the meeting will discuss the following topics:

(1) Ciment fondu in practice; (2) surface dust on concrete floors in factories; (3) cement in sea water; (4) cement in concrete roads; (5) preparations to withstand oil; (6) influence of size and shape in compression test blocks; (7) microscopy of cement; (8) porosity of concrete blocks; (9) use of sea water in mixing cement; and (10) any other subject suggested by Societies.

In addition, it is expected that facilities will be provided for those in attendance to visit prominent English cement manufactories. At the same time, opportunity will be afforded to visit the International Building Trades Exhibition and the British Empire Exhibition at Wembley, London. It is expected that the Society will be represented at this Congress.

Engineering Scholarships Available at Columbia and Yale Universities

Student Members and Juniors of the Society will be especially interested in the Engineering Scholarships now available at Columbia and Yale Universities.

Scholarship in Civil Engineering at Columbia University

The governing bodies of Columbia University have placed at the disposal of the Society, a scholarship in Civil Engineering in the Schools of Mines, Engineering and Chemistry of Columbia University. The scholarship pays $350 toward the annual tuition fees, which vary from $340 to $360, according to the details of the course elected. Re-appointment of the student to the scholarship for the completion of his course is conditioned upon the maintenance of a good standing in his work.

To be eligible for the scholarship, the candidate recommended will have to meet the regular admission requirements, in regard to which full informa-

tion will be sent without charge upon application to the Secretary of the University.

An applicant for this scholarship should set forth his qualifications (age, place of birth, education, statement of any other activities, such as athletics, or working way through college, references, and photograph). The last day for the filing of applications will be July 1, 1924.

The course at the Columbia Schools of Mines, Engineering and Chemistry, is three years in length and is on a graduate basis. A candidate for admission must have had a general education, including considerable work in mathematics, physics, and chemistry. Three years of preparatory work in a good college or scientific school should be sufficient, if special attention has been given to the three preparatory subjects mentioned. A college graduate, with a Bachelor of Science degree in engineering, can generally qualify to advantage. The candidate is admitted on the basis of his previous collegiate record, and without undergoing special examinations. Other qualifications being equal, members of Student Chapters of the Society will be given preference.

The purpose of this advanced course is to produce a high type of engineer, trained in the humanities as well as in the fundamentals of his profession. Opportunity is thus offered to some worthy young engineer, to secure modern and up-to-date instruction at a University with magnificent equipment and in a city which offers many advantages to the engineer. It is hoped that members will show a keen interest in this scholarship, which will insure the choice of a candidate of the highest qualifications.

Strathcona Memorial Fellowship in Transportation at Yale University

The Strathcona Memorial Fellowship in Transportation, of One Thousand Dollars, is offered annually for advanced work in Transportation, with special reference to the construction, equipment, and operation of railroads, the problems connected with the efficient transportation of passengers and freight and the financial and legislative questions involved. The holder of the Fellowship must be a man who has obtained his first degree from an institution of high standing. In making the award, preference is given, in accordance with the will of Lord Strathcona, to such persons or to sons of such persons as have been, for at least two years, connected in some manner with the railways of the Northwest.

Applications for this Fellowship should be addressed to the Dean of the Graduate School of Yale University, New Haven, Conn., before May 1, on blanks which may be obtained from the Dean, and should be accompanied by:

1.—A statement of the applicant's education and practical experience.
2.—A statement of the particular field of interest to the applicant and his reasons and purposes for desiring the Fellowship.
3.—Letters of recommendation.
4.—Reprints of articles or publications by the applicant.

The increased attention given to transportation problems proves the importance of this field of engineering. This opportunity to study at Yale University under favorable circumstances should prove attractive to many young engineers.

Research Narratives of Engineering Foundation

In January, 1921, Engineering Foundation began printing twice a month little leaflets entitled Research Narratives. Each contained a five-minute story of research, invention, or discovery. The stories, or the materials for them, were contributed by scientists and engineers of international reputation.

The purposes were to broaden general intelligence about research in science and engineering and to increase interest. Means at the disposal of the Foundation permitted mailing the Narratives only to a limited list. The editions were soon exhausted; numerous requests for back numbers could not be satisfied. Suggestions came to the Foundation that the Narratives should be collected into a book and re-issued.

Believing that these Narratives would be interesting and useful to thousands of persons who have not known about them, Engineering Foundation is having the first fifty made into a small, well-bound book and offering it at fifty cents per copy.

The Narratives cover a wide range of subjects. A few titles will be suggestive: The Story of Mendelism; Electric Welding; Nitrogen, Its Capture and Utilization; Whittling Iron; A Serbian Herdman's Contribution to Telephony; The Birth of Bakelite; The Upper Critical Score. Most of the Narratives are readable by students in the last years of good secondary schools, as well as by their elders in business, industry, engineering, teaching, and other vocations.

Arrival of Young Italian Engineers

Already three groups of recent Italian engineering graduates have arrived in this country to learn something of American engineering practice. These men are part of the "intellectual migration" brought about through the efforts of the Italian Ambassador, Prince Caetani, himself an engineer.

Prior to their departure for various localities where they will work, these young men were entertained February 27 and March 3, 1924, by the Founder Societies at the Engineering Societies Building. A welcome was extended by John W. Lieb, M. Am. Soc. C. E., who is especially well qualified to act in this capacity, inasmuch as he, for several years, lived in Italy and is, therefore, well versed in both Italian and American engineering practice.

In his address Mr. Lieb spoke, in part, as follows:

"To me was given the very pleasing task of welcoming you to this country in the name of the four National Societies of Civil, Mining, Mechanical, and Electrical Engineers.

"Americans dislike long speeches, but I wish to mention briefly a few facts which may be of interest to you.

"First of all, I wish to state, that in the United States the status of professional men, especially of engineers, differs somewhat from their status in your own country. In Italy an engineer is a member of an honored profession, on a par economically and socially with medicine and law. In the United States, on the other hand, an engineer, while he performs as important work, has not, socially, the same standing.

"In the United States, a University degree is not essential, nor is it given as much importance as in your own country. Here, an engineer is recognized

and esteemed for what he is and does, not for his antecedents, or education, or whether or not he possesses a degree. Consideration is given only to his competency and ability to perform the work undertaken. You must, therefore, not be surprised if, too, your degrees are not given the importance you are accustomed to.

"On behalf of the Four National Engineering Societies, which I have the honor to represent on this memorable occasion, I wish to assure you that your professional colleagues of America are very happy to have you with them. We Americans, especially we professional men, are perfectly aware of how much civilization is indebted to Italy not only in the fine arts but also in the fields of our own professional activity. We know that the theories and sciences on which engineering is based originated for the greater part in your 'Beautiful Land'. It is therefore with a great deal of pleasure that we see you among us, and we feel certain that from your stay here new horizons and ideas will be thrust upon you. You will see things done on a larger scale than you are accustomed to and your stay here will be of immense benefit to you."

Form for Submitting Society Papers and Discussions

Disregard of the rules for the preparation of papers and discussions presented to the Society has become so flagrant that a request for more care in this regard is in order.

Rules for the preparation of copy have been promulgated by the Committee on Technical Activities and Publications of the Society and may be found on the inside of the rear cover of each number of *Proceedings* as well as in the Year Book. Likewise, a leaflet relating to this subject has been issued and will gladly be sent on request.

It is desired to emphasize that these "Rules" are not arbitrary. Each provision has a "meaning of its own", aimed to expedite publication. For example, the request that manuscripts be type-written, double-spaced,—one of the most neglected—is to facilitate editing and printing. At least two copies of papers is essential in order to expedite the consideration of manuscripts; likewise with the remaining regulations.

The Society is fortunate in having a large number of papers submitted for publication, which are noteworthy contributions to engineering literature; adherence to the simple requirements in future papers and discussions will lighten the burdens of the Secretary's office and work to the benefit of both the Society and the authors.

Service of Engineering Societies Library

According to the Annual Report of the Engineering Societies Library for 1923:

"The Library serves members in a variety of ways: 1. By direct assistance to visitors to the reading room; 2. By answering inquiries by letter or telephone; 3. By searching for information and compiling lists of references; 4. By translating material in foreign languages; 5. By copying magazine articles and other publications."

To these items has recently been added (in December, 1923) the lending service.* As the Director remarks in the same report:

* *Proceedings*, Am. Soc. C. E., January, 1924, Society Affairs, p. 6.

"Opportunity for improvement is to be found in the betterment of our work, rather than in seeking new ways, and our efforts are constantly directed to the problem of improving the quality of the help given to readers, of lessening the time required, and of increasing our resources."

The ability of the Library to serve can be handicapped by failure of members to avail themselves of its facilities; the fact that more than 24 000 persons visited it during 1923 is proof of its value in the minds of many engineers.

Work of Coast and Geodetic Survey

The Annual Report of E. Lester Jones, Assoc. M. Am. Soc. C. E., Director of the U. S. Coast and Geodetic Survey, recently issued, indicates considerable progress. The routine field work has been continued; this Bureau has completed surveys of the Atlantic and Pacific Coasts and in part of the Alaskan shore, particularly along the Gulf of Alaska. To some extent, these waters are subject to change and thus involve periodic re-surveys. In addition, a broad network of triangulation and precise leveling has been established to cover the United States, which it is hoped to connect with the Alaskan surveys in the near future by co-operation with the Canadian Government engineers. The year has been marked by the augmentation of floating equipment and the development of improved apparatus. A hydrographic survey of New York Harbor, completed by the Survey in conjunction with the U. S. Engineer Department, is of potential value to civilian and military engineers alike. The report states that among the more urgent needs for the near future are adequate quarters for the Washington Office and numerous small craft to supplement the excellent fleet of the Survey's vessels.

Rules Governing Award of Rudolph Hering Medal

The Sanitary Engineering Division of the Society has established a prize to be known as the Rudolph Hering Medal. This project originated with Samuel A. Greeley, M. Am. Soc. C. E. The Division was instrumental in raising more than $1 500 as endowment and selected, by authority from the Board of Direction, the name in honor of the eminent sanitary engineer, the late Rudolph Hering, M. Am. Soc. C. E.

The rules for the annual award recently adopted by the Board of Direction, through its Executive Committee, largely follow the suggestions of the Sanitary Engineering Division and are published as part of the minutes of the meeting of February 11, 1924, of that Committee.*

Compulsory Studies for Apprentices

A closer alliance between Labor and Capital through education is evidenced in a recent agreement between a Pittsburgh local union and its employers. Among its novel and somewhat radical terms is the stipulation that every apprentice attached to the Union "must and shall attend Sheet Metal Classes at the Carnegie Institute of Technology the last four years of his apprentice-

* See p. 351.

ship, or until he has finished the course for Sheet Metal Apprentices." The extent of co-operation to which the employers have committed themselves to assist in the training is recorded in the section of the agreement which states: "The employer shall send the apprentice to the Carnegie Institute of Technology for trade instruction one day each week from October 1 to May 1 during the last four years of his apprenticeship. The apprentice shall be allowed his regular wage for days while attending school." The special course outlined includes the subjects of shop work, pattern-drafting, and mathematics. Each apprentice pays his own tuition fee.

As a reward for high scholarship in their studies, special terms have been written into the agreement by which it has been made possible for a studious apprentice to receive increased pay. All the apprentices are paid a definite scale of wages that is automatically increased every eight months; the scholarship plan gives each man an opportunity to secure his next regular increase two months earlier each year.

Although this measure is purely local in its scope, it is stated that the contract is regarded by educators, employers, and Union officials, as the forerunner of similar agreements to be made leading toward the proper training of Union trade apprentices.

Society Officers to Visit Local Sections

Following the Spring Meeting at Atlanta, Ga., April 9-12, 1924, President Grunsky and Secretary Dunlap expect to visit various Local Sections of the Society according to the following itinerary: April 13-15, New Orleans, La.; April 16-17, Brownsville, Tex. (Spring Meeting, Texas Section); April 19, Oklahoma City, Okla.; April 21, St. Louis, Mo.; April 22, Nashville, Tenn.; April 23, Cincinnati, Ohio; April 24, Dayton, Ohio; and April 25, Columbus, Ohio.

Leaving Columbus, the Secretary will probably return to New York alone, stopping over for the day, April 26, with the Pittsburgh Section.

Practical Steps to Improve Our National Transportation System

Under this heading an instructive address was given by Samuel Rea, Hon. M. Am. Soc. C. E., President of the Pennsylvania Railroad System, before the Chamber of Commerce of the United States on January 17, 1924, at Philadelphia, Pa.

Mr. Rea asserted that the National transportation system is susceptible of great improvement. To achieve this result it is necessary to "give the railroads adequate net operating income by permitting them to earn, for a sustained period of time, at least a six per cent. return upon the property devoted to public service for several districts or groups." According to Mr. Rea, there are four methods of bringing this about:

First.—By readjustment of the rate structure to yield larger revenues. In this connection he suggests that the "present form of public regulation has not yet proven its ability to provide the railroad with a fair or adequate return."

Second.—By lowering the labor costs. The cost of wages was stimulated during war times and has since been kept at a level abnormally high. Further improvement in the situation may be obtained by whole-hearted co-operation of employees and railroads, which method is being attempted by the Pennsylvania Railroad.

Third.—By reduction of taxes. During the past ten years, taxes have increased 150%, whereas the return to stockholders has decreased 16% in spite of an enormously increased volume of service rendered. A reduction in taxation is imperatively needed to relieve this condition.

Fourth.—By greater efficiency in operation. This may be accomplished by a more efficient use of existing facilities and study of the extension of or additions to physical facilities and the character which they should take.

Mr. Rea also spoke at length on the advantages and disadvantages of the proposed consolidation of railroads.

Presentation of John Fritz Medal

Award of the John Fritz Medal has been made* to Ambrose Swasey, Hon. M. Am. Soc. C. E.; the formal presentation will take place at a meeting to be held in the Auditorium of the Engineering Societies Building, on the evening of April 23, 1924, at 8:30 P. M.

This meeting will be open to the public and will be of special interest to all engineers. Charles F. Rand, Chairman of Engineering Foundation, will preside. It is expected that the speakers will include Major-General William Crozier, U. S. A. (*Retired*), former Chief of the Ordnance Department, and that John R. Freeman, Past-President, Am. Soc. C. E., will formally present the Medal.

Committee Appointed to Make Cement Survey

The Secretary of Commerce has appointed an Advisory Committee to make a comprehensive survey of the properties and uses of cement and concrete. The Committee will co-operate with the Bureau of Standards and officials of the Department of Commerce and will consist of John Lyle Harrington, M. Am. Soc. C. E., who is a consulting engineer, as Chairman; C. H. Boynton, a cement manufacturer; N. Max Dunning, an architect; H. C. Turner, Assoc. M. Am. Soc. C. E., a contractor; and Charles M. Upham, Assoc. M. Am. Soc. C. E., a highway engineer.

It is proposed through the survey to correlate, for the benefit of the industry and the public, the results of present scientific and technical activities and to center under the direction of the Department of Commerce, a thorough and disinterested study of the entire subject. It is believed that such concentration of effort will produce material results in the elimination of wasteful duplication of effort, will effect savings to the public, and result in benefit to the manufacturer.

* *Proceedings*, Am. Soc. C. E., March, 1924, p. 111.

Dinner of San Francisco Section to President Grunsky

President Grunsky was entertained on February 11, 1924, at a complimentary dinner in his honor, given by the San Francisco Section of the Society at the Palace Hotel.

After the dinner, about one hundred members and guests devoted the remainder of the evening to entertainment both serious and frivolous in nature. Included among the guests were John L. Harrington, John F. Stevens, and A. M. Hunt, Members, Am. Soc. C. E., also representatives from the Commonwealth Club, a local civic organization of which Mr. Grunsky has been President.

The concluding address, by H. L. Haehl, M. Am. Soc. C. E., proved to be an eloquent appreciation of the man, his character, and his accomplishments, sentiments which were shared by all those present.

Progress of Davis Bridge Dam Structure

The Davis Bridge Dam of the New England Power Company, near Whitingham, Vt., is unusual in several respects. Among hydro-electric projects in New England, it ranks as one of the few of any considerable magnitude. The earth dam—200 ft. high—is said to be the highest of this type in the world. The spillway for this structure has been described,* by Ford Kurtz, M. Am. Soc. C. E.

Recently, one of the final steps in the work was taken by the pouring of a concrete plug in the temporary by-pass tunnel, 22 ft. in diameter. This has been done with a view to utilizing the Spring freshet of the present year in filling the lake, which, when completed, will be about 10 miles long and less than ½ mile wide on the average.

The filling of the lake has been synchronized with the raising of the dam to its final height and the completion of the pressure tunnel, spillway, powerhouse, and transmission line, so that this important link in the properties of the New England Power System may be ready for operation this Spring. Members who were fortunate enough to enjoy the intensely interesting meeting of the Society on March 5, 1924, at which the Davis Bridge Spillway was discussed, will feel a personal interest in this project.

Reprints of Steel Highway Bridge Specifications Available

The work of the Society's Special Committee on Specifications for Bridge Design and Construction has recently resulted in a final report covering Specifications for Design and Construction of Steel Highway Bridge Superstructure, which appeared in *Proceedings* for March, 1924. For members who desire this report in a more useful form, as for filing or office consultation, the Society has had a special reprint made in the shape of a 24-page pamphlet, which may be obtained at a cost of 15 cents net, each.

* *Proceedings*, Am. Soc. C. E., December, 1923, Papers and Discussions, p. 1953.

Activities of Local Sections*

Meeting of the Colorado Section

A regular meeting of the Colorado Section, which was preceded by a dinner, was held at the Cactus Club, Denver, Colo., on January 31, 1924; President John S. Means in the chair; William B. Freeman, Secretary; and present, also, in addition to 26 members of the Section, 22 members and guests of the Rocky Mountain Branch of the Associated General Contractors of America, who were the guests of the Section.

The minutes of the meetings of December 6 and 8, 1923, were read and approved.

On motion, Mr. Arthur O. Ridgway was unanimously elected as delegate and Mr. Lyman E. Bishop as alternate to represent the Section in the Colorado Engineering Council.

A telegram of condolence which was sent to Mrs. George G. Anderson by the Section at the time of the death of her husband, George Gray Anderson, M. Am. Soc. C. E., was read, as well as the following resolution prepared by a Committee consisting of Messrs. H. S. Crocker and H. L. Aulls on the death of Edward F. Vincent, M. Am. Soc. C. E., a member of the Section:

"*Be It Resolved:* That the Colorado Section of the American Society of Civil Engineers, in deep sorrow, records the death of Mr. Edward Franklin Vincent which occurred at Jacksonville, Florida, on December 29, 1923.

"That this appreciation of his spirit and character be written upon its minutes and transmitted in proper form to his family in order that full realization may be had of his unselfish service to the Engineering Profession as a Municipal Engineer of strict honesty and upright standards; a Railroad Engineer of high achievement and unwavering perfection of detail; a Conscientious Co-Worker whose fair presentation of his own ideas together with his kindly consideration of the viewpoints of others endeared him to his associates; a Man whose gentle manner and quiet ways have left with his friends the most pleasant of memories."

On motion, the Secretary was instructed to include this telegram and the resolution in the minutes of the meeting and to send a signed copy of the resolution to the family of the late Mr. Vincent.

The Entertainment Committee, consisting of Messrs. O. T. Reedy, Chairman, and C. A. Betts, then took charge of the meeting, and the Chairman introduced Mr. J. Fred Roberts, of the Associated General Contractors of America, who acted as Toastmaster.

Addresses were made by Messrs. C. S. Lambie, President of the Rocky Mountain Branch of the Associated General Contractors of America, Henry M. Roberts, F. C. Hitchcock, W. R. Richards, John A. Crook, H. W. Moore, and Edward Lednum. A feature of the entertainment was a burlesque paraphrasing "Universal Contract Agreements and General Conditions" as viewed by the contractors.

The Chairman of the Entertainment Committee extended the thanks of the Section to the Toastmaster and the members of the Associated General Contractors of America, for a very successful entertainment.

* For list of Local Sections, Officers, Rules, etc., see 1923 Year Book, p. 15 and p. 357.

Meeting of the Cincinnati Section

A meeting of the Cincinnati Section was held at the Engineers Club, Cincinnati, Ohio, on February 11, 1924; President J. A. McDonough in the chair; Clifford N. Miller, Secretary; and present, also, 8 members.

The minutes of the previous meeting were read and approved.

On motion, President McDonough was authorized to write letters to the proper parties, endorsing the action of the Board of Direction in regard to the proposed improvement of the St. Lawrence River.

The appointment of a Committee on Membership was announced by the President.

Mr. H. W. Streeter, of the U. S. Public Health Service, presented a paper entitled "Some Recent Developments in Stream Pollution", which was followed by an extended discussion of the subject.

On motion, copies of this paper were ordered sent to the members of the Section and to some others, including Secretary John H. Dunlap of the Society.

Meeting of the Dayton Section

A regular meeting of the Dayton Section was held at the Engineers Club, Dayton, Ohio, on February 11, 1924; President J. H. Kimball in the chair; C. H. Eiffert, Secretary; and present, also, 17 members.

A resolution favoring the Mellon Plan for reducing the Income Tax, was read by the Secretary.

Mr. W. H. Russell addressed the meeting on "Salesmanship," referring especially to the sale of building materials.

Detroit Section Takes Part in Joint Meeting

The Local Sections of the American Society of Civil Engineers, American Society of Mechanical Engineers, American Institute of Electrical Engineers, American Association of Engineers, and the Detroit Engineering Society, held a Joint Meeting at the Headquarters of the Detroit Engineering Society on February 29, 1924; Mr. Edward S. Reed, of the American Society of Mechanical Engineers, presided; and there were present, also, 153 members and guests, of which 24 were members of the Detroit Section.

Mr. Louis E. Ayres, representing the American Association of Engineers, addressed the meeting on "The Population and Growth of Detroit", pointing out the necessity of accurate estimates and forecasts of population for the design of public utilities. He also discussed in detail the methods used to forecast the population and its distribution in a Metropolitan Area of about 300 sq. miles, in and around Detroit, and presented an engineer's vision of such an area thirty years hence.

Representing the American Society of Mechanical Engineers, Mr. George H. Fenkell spoke on the "History and Development of the Present Water Supply of Detroit", and the factors effecting the design of its pumping and distribution system. He also presented data concerning past and present con-

sumption and of the work done to meet the requirements for adequate fire protection, as well as the plans recently adopted for a new water supply.

Mr. Gardner S. Williams, representing the Detroit Engineering Society, related some interesting anecdotes about the old pumping engines now being dismantled at the water-works pumping station, and presented a history of the several projects for securing a supply of water from Lake Huron. He also presented a comparison of the quality of Lake Huron water with that obtained in the Detroit River, and some details of the necessary construction and costs of a adequate supply from Lake Huron.

Representing the American Society of Civil Engineers, Professor William C. Hoad addressed the meeting briefly on the art of water purification and its easy application to water from the Detroit River. Professor Hoad was followed by Mr. F. H. Stephenson, also representing the Society, who spoke briefly of the methods adopted for estimating the construction and operating costs of several projects studied in connection with the report of Mr. Fenkell to the Board of Water Commissioners on "Additional Water Supply for Detroit and Vicinity."

Mr. E. L. Bailey, of the American Institute of Electrical Engineers, addressed the meeting regarding electric motor-driven pumping machinery and of the advantages and economy of such machinery in a city situated like Detroit.

Meeting of the Duluth Section

A regular meeting of the Duluth Section was held on February 18, 1924; President Thomas F. McGilvray in the chair; Walter G. Zimmermann, Secretary; and present, also, 22 members and 5 guests.

The minutes of the meeting of January 21, 1924, were read and approved.

On motion, the Secretary was instructed to forward the memoir of the late William Baird Patton, M. Am. Soc. C. E., as prepared and presented to the Section by Lyonel Ayres, M. Am. Soc. C. E., to Secretary John H. Dunlap of the Society for publication.

Mr. J. H. Darling presented a report prepared by the Committee consisting of himself and Messrs. W. H. Hoyt and G. A. Taylor, in reference to the improvement of the St. Lawrence Waterway. The report included a letter recommending the appointment by Congress of a technical commission to study the project further and to develop all the engineering data necessary to inform Congress properly on the proposed improvement.

On motion, the report was accepted, and the Secretary was instructed to carry out the provision therein.

A paper on the subject of "History and Development of Diamond Drilling" was presented by Mr. S. E. Atkins, who also passed among the members present, drill bits, cores, black diamond, and some blueprints showing records of drill work.

Meeting of the Georgia Section

A meeting of the Georgia Section was held on March 3, 1924; President J. H. Johnston in the chair; F. H. McDonald, Secretary; and present, also, 18 members.

A letter dated February 11, 1924, from Secretary John H. Dunlap of the Society, stating that the Board of Direction had authorized the change of name of "Atlanta" Section to "Georgia" Section, was read, and, on motion, it was decided that the Atlanta Section should hereafter be known as the Georgia Section.

After discussion, it was decided, on motion, to continue the present dues of resident members and to make the dues of non-resident members $1 per year.

A request was presented from Secretary Dunlap for the appointment of a Local Committee on Publications and Technical Activities to co-operate with the Committee of the Society. After discussion, it was the opinion of the members present that as the Committee on Publications and Technical Activities of the Society is a sub-committee of the Board of Direction, the Board of Directors of the Section be authorized to act in this capacity and to appoint such sub-committees as are required.

On motion, the Secretary was authorized to send out a general letter of invitation to members of the Society in Georgia to become members of the Georgia Section.

A telegram was read from Director Arthur J. Dyer, of District No. 10, expressing regret at not being able to address the Section as he had planned.

Professor H. E. Riggs, of the University of Michigan, who was present as a guest, addressed the meeting briefly on the development of the Student Chapter at the University of Michigan.

Mr. W. A. Hansell, as Chairman of the Local Section of the American Society of Municipal Engineers, stated that as its budget for the Spring Convention had been over-subscribed, the excess funds had been voted to the assistance of the Georgia Section for the Spring Meeting of the Society, with provisos.

President Johnston thanked Mr. Hansell, and a rising vote of thanks was extended by the meeting to the American Society of Municipal Engineers.

Meetings of the Los Angeles Section

A meeting of the Los Angeles Section, which was preceded by a dinner, was held at the City Club, Los Angeles, Calif., on January 9, 1924; President Franklin Thomas in the chair; Floyd G. Dessery, Secretary; and present, also, 47 members and 7 guests.

The Annual Report of the Secretary, as well as the report of the Treasurer, for 1923, was read by the Secretary and, on motion, these reports were received and ordered to be filed.

Mr. H. W. Dennis, Chairman of the Convention Finance Committee, addressed the meeting regarding funds for the Convention and the method devised by the Convention Committee in the sale of Society emblem stickers.

Mr. U. S. Marshall, a member of the San Francisco Section, presented a brief address.

The Secretary presented a letter dated January 5, 1924, from Mr. Robert Anderson and Miss Lorencie Anderson, the son and daughter of the late George Gray Anderson, M. Am. Soc. C. E. After a few remarks by President Thomas, the members present stood in silence for a few moments in memory of Mr. Anderson.

President Thomas introduced Mr. George H. Dunlop, former Mayor of Hollywood and, later, Secretary of the Board of Freeholders of Los Angeles, who addressed the meeting on "The Proposed New Charter of the City of Los Angeles", which is to be submitted to the electorate of the city on May 6, 1924. Mr. Dunlop described the workings under the proposed charter as being a citizen's and not a politician's form of government. He stated that the new charter provides for budgets for the various departments and modern methods of administration.

Discussion on the subject was opened by Mr. F. D. Howell, the only engineering member of the Board of Freeholders, who spoke on "Possibilities of Rapid Transit and Traffic Relief under the New Charter as Compared with the Present Charter". The subject was also discussed by Messrs. L. C. Hill, F. A. Schilling, H. W. Hincks, Franklin Thomas, and H. W. Dennis.

On motion, a vote of thanks was extended to Mr. Dunlop and Mr. Howell for their instructive addresses.

Meeting of February 13, 1923

A meeting of the Los Angeles Section, which was preceded by a dinner, was held at the City Club, Los Angeles, Calif., on February 13, 1924; President Franklin Thomas in the chair; Floyd G. Dessery, Secretary; and present, also, 48 members and 19 guests.

Messrs. Ralph J. Reed and H. W. Dennis presented the following resolution on the death of Past-Director George Gray Anderson, which was unanimously adopted and ordered spread on the minutes:

"*Whereas,* on December 23, 1923, George Gray Anderson, Civil Engineer, after an illness of several months, was called to his everlasting reward; and

"*Whereas,* by his passing, the American Society of Civil Engineers has lost a Director and member who was a wise and competent engineer, a safe advisor, and a loyal and untiring worker in behalf of the Society; and

"*Whereas,* we of the Los Angeles Section, American Society of Civil Engineers, have lost more—a devoted friend.

"*Therefore Be It Resolved:* That we extend to his bereft family our deep sympathy, and that we undertake so to follow his example that when our time shall come we individually may be as well prepared to follow him from this land of experience and precedent, theory and formula, to the realm where faith and hope must be our guide; and

"*Be It Further Resolved,* that a copy of this proceeding be sent to the family of our departed friend."

A written report was presented by Messrs. Harry Hawgood and R. W. Lawton of the Symposium Program Committee. On motion, the report was accepted, and the Committee was instructed to proceed with arrangements for subsequent programs, as outlined in the report.

Mr. Murdock, President of the New Brunswick Association of Institute of Engineers, presented a brief description of the work of the Institute.

Brief addresses on general conditions were also made by Mr. S. Fisher Miller, President of Pacific Flush Tank Company of New York, and Mr. Nathan A. Bowers, Pacific Coast Editor of the McGraw-Hill Publishing Company.

Mr. Walter L. Huber, Director of the Society from District No. 13, spoke on the Annual Convention of the Society to be held at Pasadena, Calif., in June, 1924, and offered the co-operation of himself and President Grunsky of the Society and also the members of the San Francisco Section to make the Convention a success.

Professor Willis Luther Moore of George Washington University, and, for many years, Chief of the United States Weather Bureau, was introduced by Dr. Ford A. Carpenter and addressed the meeting on "The Change of Climate". Dr. Moore recounted the progress made in weather science and described the work of the Weather Bureau.

After discussion of the subject by those present at the meeting, Dr. Moore was extended a vote of thanks.

Meeting of the New York Section

The third of a series of meetings on Transportation was held by the New York Section at the Engineering Societies Building, New York, N. Y., on February 13, 1924; President James H. Edwards in the chair; Harold M. Lewis, Secretary; and present, also, about 155 members and guests.

A paper on "Shall the Construction of Interstate Vehicular Crossings Be Turned Over to the Port of New York Authority," was presented by Col. William J. Wilgus, who stated that he was opposed to the transfer of the New York-New Jersey Vehicular Tunnel from the present interstate commission to the Port of New York Authority. Under the existing arrangement, the cost of construction of this tunnel is borne equally by the two States and on its completion tolls are to be fixed at rates to permit the amortization of this cost within twenty years, when the use of the tunnel could probably be made free. Col. Wilgus stated that if the Port Authority were to take it over there would be no assurance that tolls would be stopped at such a time. He also stated that he favored a Port Authority constituted similar to the Ports of London and Liverpool on which there is represented the rate-paying interests, the shipping interests, the rail interests, and the municipalities. He also suggested that smaller sized electric train tunnels should be built for freight transfer across the river, and that vehicular tunnels should be used primarily for light vehicles.

Mr. J. Vipond Davies expressed the belief that the Port Authority was the proper body to have final control of the tunnel.

Mr. C. M. Holland, Chief Engineer of the New York and New Jersey Bridge and Tunnel Commissions, described the progress of the construction of the tunnel to date, stating that the increase in cost on the estimate of 1919 was due to the increase in cost of ventilation, of labor and materials in the approach contracts, the architecture of the tunnel, and the increased size of the plazas which have been found necessary.

Mr. W. J. Boucher, of the Port Authority's staff, briefly stated that the Port Authority was not seeking control of the vehicular tunnels, but had reported on the river crossings in accordance with the request by the Governors of the States of New York and New Jersey.

The subject was further discussed by Messrs. Fred Lavis, Arthur S. Tuttle and Billings Wilson.

A resolution was offered by Mr. W. C. Briggs, the first part of which stated that it was the sense of the meeting that the vehicular tunnel should not be turned over to the Port Authority, the second part calling for a Board of Engineers to be employed by private interests to study the transportation problems of the Port. This resolution was seconded, but failed to carry.

Annual Meeting of the Seattle Section

The Annual Meeting of the Seattle Section, which was preceded by a dinner, was held at the Engineers' Club, Seattle, Wash., on January 28, 1924; Past-President Thomas E. Phipps in the chair; Frank H. Fowler, Secretary; and present, also, 37 members.

The minutes of the last Annual Meeting were read and approved.

The report of the Secretary was presented and, on motion, was referred to the incoming officers.

The report of the Treasurer was read and, on motion, was approved, subject to the checking of the Auditing Committee, which, it was stated, would be reported at the next meeting.

The address of the evening was made by Mr. Robert S. Boyns whose subject was "The Engineer and Business".

A rising vote of thanks was tendered Mr. Boyns for his instructive address.

The following officers were elected for the ensuing year: President, Frank H. Fowler; Vice-President, Chauncey Wernecke; and Secretary-Treasurer, T. H. Carver.

On motion, the President was requested to ascertain the cost of binding volumes of *Proceedings* stored at the Engineers' Club.

Annual Meeting of the Utah Section

The Annual Meeting of the Utah Section, which was preceded by a dinner, was held at the University Club, Salt Lake City, Utah, on February 24, 1924; President H. C. Means in the chair; H. S. Kleinschmidt, Secretary; and present, also, 17 members and 3 guests, including 2 student members from the University of Utah.

Mr. C. H. West, the official representative of the Section at the Conference of Representatives of Local Sections held during the Annual Meeting of the Society in New York, N. Y., on January 17, 1924, reported the results of this Conference.

President Means presented a report relative to his conference with officers of the Irrigation Division in San Francisco, Calif., in regard to the Summer Meeting of the Society to be held in Salt Lake City, in 1925, and Secretary Kleinschmidt reported as to a meeting in Los Angeles, Calif., also in connection with that meeting.

On motion, the Board of Directors of the Section were requested to take active steps at once toward making arrangements for this meeting.

Mr. R. K. Brown was elected to represent the Section on the Governing Board of Engineering Council of Utah.

On motion, it is decided to levy an assessment of $1.00, in addition to the dues of $2.00 for 1924, to take care of the additional expenses incident to the arrangements of the 1925 Meeting of the Society.

On motion, resolutions of regret on the death of Director George G. Anderson were ordered to be sent to his family, to the Los Angeles Section, and to Society Headquarters.

By unanimous vote of the meeting, Secretary Kleinschmidt was instructed to take up with the Board of Direction of the Society, the matter of changing the end of the fiscal year of the Society from January 1 to July 1, and of publishing the Year Book as of July 1.

The following officers were elected for 1924: President, Ora Bundy; First Vice-President, R. A. Hart; Second Vice-President, A. B. Purton; and Secretary-Treasurer, H. S. Kleinschmidt.

Activities of Student Chapters*

Clemson Agricultural and Mechanical College of South Carolina

The Student Chapter of the Society at Clemson College is reported to be in vigorous condition. At regular monthly meetings which are largely attended, the program ordinarily includes a speaker who is an authority on some special topic in civil engineering and the discussion of personal experiences by members present. A great deal of the interest is due to the restrictions of membership to those students with high scholastic standing. The program also contains social events, including an informal banquet.

University of Minnesota

On January 31, 1924, this Chapter held its second banquet of the year with 110 in attendance. The principal address was on "Federal Valuation of Railroads", by Fletcher Rockwood, Special Counsel for the Great Northern Railroad. A. F. Meyer, M. Am. Soc. C. E., a member of the Northwestern Section, attended the meeting as representative of that Section.

New York University

The New York University Student Chapter met on Wednesday, February 17, 1924, in the Y. M. C. A. Hut and listened to an interesting illustrated lecture on "Railroad Reconstruction", by Alexander Haring, M. Am. Soc. C. E. Refreshments, served after the lecture, added to the sociability of the occasion.

Oregon State Agricultural College

The Student Chapter at Oregon State Agricultural College has devoted several sessions to joint meetings with one of the advance civil engineering courses held as a seminar. Members have covered various subjects as follows: "Wood Stave Pipe as a Conveyance of Water", by Lester S. Tubbs, January 12, 1923; "Water Power Development in the Northwest", by John A. Baumgartner, January 19, 1923; and "Military Engineering", by Edward A. Notson, February 9, 1923.

The treatment of these subjects is evidence of mature and intensive study, and the co-operation of the Student Chapter with college activities was considered to be quite successful.

University of Pennsylvania

The February meeting of the University of Pennsylvania Student Chapter of the Society was devoted to the subject of the manufacture of cast-iron pipe. The speaker was Howard A. Hoffer, Eastern Sales Manager, U. S. Cast-Iron Pipe and Foundry Company, who with the aid of motion pictures gave a very clear account of the details of the process.

* For List of Student Chapters, Officers, etc., see 1923 Year Book, p. 21 and p. 357.

The University of Washington

The Student Chapter of the University of Washington includes in its membership practically all the Civil Engineering Students of the three upper classes, Freshmen alone being excluded. A most interesting feature of the work is described in a recent report from the Chapter, as follows:

"The local Student Chapter of Civil Engineers is taking an active part this year in the 'Engineers Open House'. This 'Open House' is a display of engineering work put on by all of the engineering students, and is held biennially at the University of Washington. The public is invited to attend and each branch of engineers strive to make their exhibit the best. A cup is awarded to the branch turning out the best display. About fifteen thousand people attended the last Open House given by the engineers and by this method a contact is formed by the engineers and their work, with the public. The Civil Engineers, besides running the Good Roads Laboratory, timber testing machines and hydraulic equipment, work up some project in the miniature. At the last Open House the Civils made a display with a small power project. All of the design is gone through with the normal size project and then the design is reproduced in the field to a regular scale. This one consisted of an arch dam for a power project, power house, transmission line, bridge spanning the river below the dam at a natural location, hard surface roads and all the modern developments accompanying such a project. The total field work covered an area of approximately 1 000 sq. ft., and was placed on the campus in front of Good Roads Building. The students take a keen interest in these displays and the Open Houses of the engineers are gaining a considerable reputation in the community."

University of West Virginia

Meetings of the Student Chapter of the University of West Virginia are devoted largely to reviews by members of articles of current engineering literature. On February 22, 1924, the general topic was that of Structural Engineering. On February 29, a more diverse type of program included Sanitary, Highway, and Hydraulic topics. Among the future events, is a proposed theatre party for members of the Chapter and of the Faculty.

Minutes of Meetings

OF THE SOCIETY

March 5, 1924.—The meeting was called to order at 8:10 P. M.; Vice-President Lincoln Bush in the chair; John H. Dunlap, Secretary; and present, also, 79 members and guests.

The minutes of the Annual Meeting, January 16 and 17, 1924, and of the meeting of February 6, 1924, of the Society, were approved as printed in *Proceedings* of March, 1924.

A paper by Ford Kurtz, M. Am. Soc. C. E., entitled "The Hydraulic Design of the Shaft Spillway for the Davis Bridge Dam, and Hydraulic Tests on Working Models", was presented by the author and illustrated with lantern slides. Written discussions on the paper by Messrs. H. B. Muckleston, H. J. F. Gourley, B. F. Jakobsen, and Karl R. Kennison, were announced by the Secretary, and the subject was also discussed by Messrs. Allen Hazen, Charles W. Comstock, I. W. McConnell, F. W. Scheidenhelm, and the author.

Adjourned.

OF THE EXECUTIVE COMMITTEE

This is an abstract of the notes of the Secretary and subject to approval by the Board of Direction at its next meeting.

February 11, 1924.—The Executive Committee met at 10:30 A. M.; Past-President Charles F. Loweth in the chair; John H. Dunlap, Secretary; and present, also, Messrs. Bush, Holland, Webster, Winsor, and Treasurer Hovey.

The minutes of the meeting of this Committee, held on January 17, 1924, were approved.

Proposed New Form of Printing Records of Applicants

On motion, a new form of printing records of applicants was adopted, which will not increase the cost.

Districts and Zones

The report of the Committee on Districts and Zones as adopted by the Board of Direction at its meeting of January 14, 1924, added the Territory of Hawaii to District No. 13, whereas the Constitution states: "Members not residing in North America shall be allocated to District No. 1".

Both legal and geographical authorities have been asked for their opinion as to whether Hawaii can be considered as part of North America and agree that it can not.

It was unanimously decided that, inasmuch as it has been found that the action of the Board in allocating the membership in the Territory of Hawaii

to District No. 13 would be in direct conflict with the Constitution, that opinion being supported by the Society's Counsel and by a letter from the American Geographical Society, the membership in the Territory of Hawaii should be continued as a part of District No. 1 as provided in the Constitution.

It was subsequently decided to recommend to the Board that the report of the Committee on Districts and Zones for the ensuing year should be presented in the future at the October meeting.

Reports of Special Committees of the Society

Copies of the reports of the Special Committees presented at the Annual Meeting on January 16, 1924, which were referred to the Board of Direction, and, in turn, referred to this Committee with power, were presented.

The recommendation of the Special Committee appointed to Consider the Report Made to the National Fire Protection Association on the Fire Hazard of Docks, Piers, and Wharves that this Society "should have a Standing Committee on Building Construction", was considered, together with a letter dated February 7, 1924, from the National Fire Protection Association, suggesting that the Society appoint a Standing Committee on Fire Prevention.

On motion, it was decided to defer action for the present.

A letter dated January 17, 1924, from William G. Atwood, M. Am. Soc. C. E., suggesting changes in the report of the Committee, was ordered printed in *Proceedings* as a discussion of the report, the Committee being given opportunity to reply when the report is printed in the *Transactions*.

The recommendation of the Special Committee on Stresses in Structural Steel that the Society bring to the attention of the American Society for Testing Materials and the Association of American Steel Manufacturers the desirability of certain changes in their specifications was then considered.

On motion, the Secretary was instructed to carry out the foregoing recommendation.

Committee Finances

The question of financing the Special Committees of the Society was discussed, together with replies from Committees that had been asked for suggestions regarding possible outside contributions toward their work. Various means of increasing the revenue of the Society were mentioned, including advertising. Director Flinn, of Engineering Foundation, was invited to be present during this discussion as Engineering Foundation had appropriated $3 000 for the Special Committee on Concrete and Reinforced Concrete Arches and $1 000 for the Special Committee on Steel Column Research, and it was felt there should be close co-operation in soliciting funds so as to avoid duplication of effort.

Methods of approach and policy of giving credit for contributions or service were discussed, and it was decided that it would be necessary to outline a plan for the whole project of financing the Committees of the Society at the same time Engineering Foundation outlines its plan for soliciting outside subscriptions to the work of the two Committees it has undertaken to finance, access to which Committees should be had through the Secretary's office.

Mr. Flinn withdrew after assuring the Committee of the desire of Engineering Foundation to do all it could to help.

Recess was taken at 1:10 P. M.

The Committee re-convened at 2:10 P. M., with the same attendance as in the forenoon, and discussion of the financing of the Committees of the Society was continued.

The question of calling a meeting of the Research Committee, with mileage, to consider the needs of the Committees and the solicitation of outside contributions for their work was left to the discretion of the Chairman of this Committee and the Secretary. (The estimated cost of such meeting of the Research Committee and the Chairmen of the Committees under its jurisdiction would be $1 160.90.)

The Chairman charged those present with keeping this matter before them and giving it their earnest consideration.

Allotments to Technical Divisions

Requests for allotments for 1924 to the various Technical Divisions of the Society were considered at the meeting of this Committee on January 17, 1924, and certain tentative apportionments allotted of the appropriation of $3 000 made by the Board in the Budget for Divisions.

After consideration, the following allotments were definitely made:

Sanitary Engineering Division	$700
Highway Division	700
Power Division	700
Irrigation Division	400
City Planning Division	500

Request of Power Division for Ruling on Disbursements of Its Funds

At its meeting, January 15, 1924, the Board of Direction referred to this Committee with power, a letter from Secretary Maloney of the Power Division stating that his Executive Committee feels that certain accounts should be carried.

On motion, it was decided that, for the present, the same restrictions and regulations in the use of the Society's appropriations to Divisions apply to the expenditures of dues collected by a Division.

Sub-Committees to Study Problem of Government Re-organization

At its meeting, January 14, 1924, the Board of Direction discussed the question of Federal Re-organization of Government Departments and referred it to the incoming Board, which at its meeting of January 17, 1924, referred it to the Public Relations Committee with power to appoint sub-committees as may be necessary from time to time. (The former Committee on Federal Re-organization was discharged.)

It was decided to suggest to the Public Relations Committee the appointment of Messrs. Lincoln Bush and Ira W. McConnell as a sub-committee of that Committee with power to associate others with them and to consider the whole problem of re-organization of Government Departments, particularly with reference to the proposed Department of Public Works, and to represent the Society in future meetings and hearings at Washington.

Society Invited to Send Delegates to International Cement Congress

A letter of January 18, 1924, from the Institution of Structural Engineers, was presented, stating that it proposes holding an International Cement Congress at the International Building Exhibition, Olympia, London, England, April 22-23, 1924, and this Society is invited to be represented by one or more delegates.

On motion, the President was authorized to appoint delegates.

Unveiling of Bust of Captain Eads

It was reported that Past-President Pegram, of the Committee on Bust of Captain Eads, had suggested that the Executive Committee give consideration to the ceremonies connected with the unveiling of the bust of Captain Eads in the Hall of Fame, May 13, 1924, and that some one be asked to make the presentation address.

On motion, this matter was referred to Mr. Pegram and the Secretary with power.

Question of Formal Submission to American Engineering Standards Committee of Specifications for Design and Construction of Steel Highway Bridge Superstructure

The Chairman of the Special Committee to Consider and Recommend for Adoption a Specification for Bridge Design and Construction submitted and recommended for adoption its Final Report on Specifications for Design and Construction of Steel Highway Bridge Superstructure.*

The question of authorizing the formal submission of these specifications to the American Engineering Standards Committee was considered, and the Secretary was instructed to advise the Standards Committee that the Society expects to submit these specifications for its approval as soon as possible after the meeting of the Board of Direction and of the Society in April, 1924, in Atlanta, Ga.

Rules for Award of Rudolph Hering Medal

The proposed rules, approved by the Sanitary Engineering Division, to govern the award of the Rudolph Hering Medal, forwarded by Chairman Allen for approval, were considered, and after some changes had been made, were adopted in the following form:

* *Proceedings*, Am. Soc. C. E., March, 1924, Papers and Discussions, p. 265.

"The Rudolph Hering Medal was instituted and endowed in 1924 by the Sanitary Engineering Division of the American Society of Civil Engineers.

"I.—Competition for the Rudolph Hering Medal of the American Society of Civil Engineers shall be restricted to members of the Society.

"II.—There shall be one gold medal awarded as hereinafter provided. The dies therefor shall be deposited with the Superintendent of the United States Mint at Philadelphia, in trust, exclusively for the above stated purpose. Such medal shall be of the value of $ * * *.

"III.—All original papers presented to the Division and published in the current volumes of the *Transactions* shall be open to the award, provided that such papers shall not have been previously contributed to any other association, nor have appeared in print prior to their publication by the Society.

"IV.—The medal shall be awarded to the author of the paper which contains the most valuable contribution to the increase of knowledge in, and to the advancement of, the Sanitary Branch of the Engineering Profession.

"The medal shall be awarded in accordance with the rules of the Society, except that the paper for which the medal is awarded shall be recommended by a committee of three members of the Division appointed for the purpose by the Executive Committee of the Division, which Committee shall review the recommendation and act upon it not later than November 1."

Georgia Section Change in Name Approved

At the meeting of the Board of Direction, January 15, 1924, a letter dated January 8, 1924, from the Atlanta Section was presented, stating that, at its January meeting, it had been voted to enlarge the Atlanta Section so as to include out-of-town members. The President and Secretary of the Section were instructed to request the Board of Direction for permission to change the name of the Atlanta Section to that of the Georgia Section of the American Society of Civil Engineers. The Board referred this request to the Committee on Local Sections for report.

Favorable responses having been received from the Committee on Local Sections by wire, the change in name was approved.

Matters Reported for Record

The following matters were reported for the record:

United Engineering Society:

That Past-President Loweth had withdrawn his appointment of Robert Ridgway, M. Am. Soc. C. E., as one of the representatives of the Society on the Board of Trustees of the United Engineering Society, and had appointed L. D. Rights, M. Am. Soc. C. E., for a term of three years beginning January 24, 1924, and that Mr. Rights had accepted such appointment.

Engineering Foundation:

That Edward Dean Adams, F. Am. Soc. C. E., had been re-appointed as one of the representatives of the Society on Engineering Foundation and that Mr. Robert Ridgway had been appointed to fill the vacancy caused by the expiration of the term of S. H. Woodard, M. Am. Soc. C. E.

American Engineering Standards Committee:

That Milo S. Ketchum, M. Am. Soc. C. E., had been appointed to fill the vacancy caused by the expiration of the term of J. J. Yates, M. Am. Soc. C. E.,

as one of the representatives of the Society on the American Engineering Standards Committee and that Benjamin Franklin, M. Am. Soc. C. E., had been appointed alternate at large.

Preferred Numbers:

That President Grunsky had appointed F. T. Llewellyn, M. Am. Soc. C. E., in answer to an invitation from the American Engineering Standards Committee to this Society to designate a representative on the Committee being organized to study the subject of Preferred Numbers.

Sectional Committee on Fire Tests of Materials and Construction:

That George E. Strehan, Assoc. M. Am. Soc. C. E., had been appointed, in answer to an invitation from the American Society for Testing Materials to this Society to appoint a member on the Sectional Committee on Fire Tests of Materials and Construction, that Society having been designated by the American Engineering Standards Committee as one of the sponsors for the organization of the foregoing Sectional Committee.

Committee on Registration of Engineers:

It was reported at the meeting of the Board of Direction on January 17, 1924, that Director Condron would be Chairman of the Committee on Registration of Engineers in 1924, and the President was authorized to name the remaining members of the Committee. This Committee has been completed, as follows: Messrs. T. D. Condron, Chairman, Robert Farnham, W. L. Huber, Anson Marston, and E. B. Whitman.

Committee on Steel Column Research:

That the Executive Committee of Engineering Foundation, at its meeting of January 25, 1924, voted for 1924 an appropriation of $1 000 for the use of the Special Committee of this Society on Steel Column Research.

Committee on Concrete and Reinforced Concrete Arches:

That the Executive Committee of Engineering Foundation, at its meeting of January 25, 1924, voted for 1924 an appropriation of $3 000 for the use of the Special Committee of this Society on Concrete and Reinforced Concrete Arches.

Appointment of Committees on Timber and Cement to Be Withheld:

The appointment of the Committee on Cement was discussed and, it was decided to advise the President and the Research Committee that, notwithstanding that a Committee on Cement had been authorized by the Board, attention is called to the fact that there is at present no way of properly financing such a committee and to suggest that the appointment of the Committee be held in abeyance pending some definite knowledge of how its work is to be properly financed.

In regard to the appointment of the Committee on Timber and Its Application to Engineering, the Committee decided that, in view of the financial condition, especially with respect to financing research committees already in

the field, that it is desirable to withhold announcement of the personnel of that Committee until some plan of properly financing it was determined.

Adjourned at 6:35 P. M., to meet March 10, 1924.

OF THE BOARD OF DIRECTION

This is an abstract of the notes of the Secretary and subject to approval by the Board of Direction at its next meeting.

February 25, 1924.—The Board convened in regular session at 7:15 P. M., at the Headquarters of the Society; Vice-President George S. Davison in the chair; John H. Dunlap, Secretary; and present, also, Messrs. Paul G. Brown, Bush, Curtis, Farnham, Holland, Holmes, Whitman, and Winsor.

Ballots for membership were canvassed, resulting in the election of 28 Members, 53 Associate Members, 1 Affiliate, and 66 Juniors, and the transfer of 8 Juniors to the grade of Associate Member.

Nine Associate Members were transferred to the grade of Member.

A report from the Membership Committee was received and acted on.

Adjourned.

OF THE TECHNICAL DIVISIONS

Sanitary Engineering Division

(Abstract)

February 24, 1924.—A meeting of the Executive Committee of the Sanitary Engineering Division was held at the Hotel Cleveland, Cleveland, Ohio.

Announcement was made of the election by letter ballot of Mr. Harrison P. Eddy as Chairman of the Division for 1924.

Messrs. T. C. Hatton, R. O. Wynne-Roberts, and G. Bertram Kershaw were continued as a committee to make arrangements for the International Conference of Sanitary Engineers to be held in London, England.

A committee consisting of Messrs. C. A. Emerson, Jr., C. M. Saville, and E. S. Rankin, was appointed to co-operate with the National Coast Anti-Pollution League.

Messrs. J. H. Gregory, Paul Hansen, and Theodore Horton were appointed a Committee on Definitions and Messrs. Glenn D. Holmes, Langdon Pearse, and C. E. Keefer were continued as a Committee on Friction of Sludge in Pipes.

Mr. C. G. Wigley was appointed to represent the Division in consultation with the Committee of the New Jersey State Board of Health, New Jersey Agricultural Experiment Station, and the New Jersey Sewage Works Operators Association.

Rules for the award of the Rudolph Hering Medal* were adopted, and Mr. S. A. Greeley was appointed, with the privilege of selecting his associates, on a Committee on the Design of the Rudolph Hering Medal.

Messrs. W. W. DeBerard, G. B. Gascoigne, A. P. Folwell, C. G. Gillespie, and G. J. Requardt were appointed as a Nominating Committee to nominate members of the Executive Committee for 1925.

The suggestion was made that those members of the Division planning to attend the International Conference of Sanitary Engineers should go as duly appointed delegates of the Society, such appointment to be referred by the Division to the Board of Direction.

Local committees were appointed for the Division meetings to be held during the Spring Meeting of the Society at Atlanta, Ga., the Annual Convention, at Pasadena, Calif., and the Fall Meeting, at Detroit, Mich., and the subject of papers for these meetings was also discussed. Relative to the Detroit Meeting, it was decided to confer with the American Public Health Association in regard to the possibility of a Joint Meeting of the Division and of the Sanitary Engineering Section of the Association, as the latter is to hold a meeting in Detroit at the same time as the Fall Meeting of the Society.

It was voted that the Annual Dinner of Sanitary Engineers on the Tuesday preceding the first day of the Annual Meeting of the Society in New York, N. Y., be held in 1925, and Mr. Kenneth Allen was appointed to make arrangements for it.

It was announced that the next Division Meeting would be held at Atlanta, Ga., on April 10, 1924, and that Mr. P. H. Norcross would present a paper on "Municipal Water Supply Problems at Atlanta".

Plans for meetings and papers for 1924 and 1925 were discussed.

OF THE SPECIAL COMMITTEES

Special Committee on Hydraulics Phenomena

(Abstract)

January 15, 1924.—A meeting of the Special Committee on Hydraulics Phenomena was held in the Reading Room of the American Institute of Mining and Metallurgical Engineers, Engineering Societies Building, New York, N. Y. Present, S. M. Woodward (*Chairman*), M. L. Enger, R. E. Horton, A. T. Safford, and E. W. Schoder. Clemens Herschel, Past-President, Am. Soc. C. E., was also present.

The minutes of the meeting of September 13, 1923, were read and approved.

A discussion of the accuracy of steam gaugings at times of low and high water, slope measurements, effect of irregularities of the bottom and sides, ice conditions, gauge readers, etc., was participated in by the members present, and Mr. Safford agreed to undertake the preparation of an annotated bibliography on "The Measurement of Water".

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* See p. 351.

After a discussion on weir measurements, the effect of the distribution of approach was considered, and Professor Schoder stated that an error as high as 26% was possible with bad approach conditions when the depth on the weir was as high as 2 ft.

A bibliography on "Water Hammer" was presented by Mr. Horton, which presentation was followed by a detailed discussion of the form in which the bibliography should be arranged. The question of whether the list should contain only the best experiments, or should be as complete as possible, was also discussed in detail. No formal action was taken in this matter, but it seemed to be the general opinion that it would be very difficult to make a selection of a *de luxe* list.

Adjourned to meet again at 2:30 P. M.

The Committee reconvened at 2:30 P. M., with the same members present as in the morning.

Professor Woodward read the answers received in reply to the questionnaire which was sent out in December, 1923, and it was arranged to have these replies sent to each member of the Committee for further consideration.

Mr. Horton urged that each member of the Committee send suggestions to Thorndike Saville, Assoc. M. Am. Soc. C. E., in accordance with his request, copies of Professor Saville's letter having been sent to each member of the Committee by Professor Enger.

The meeting was subsequently devoted to a discussion as to further work which the Committee might undertake, but no formal action was taken.

Adjourned to meet again at 8:15 P. M.

The meeting was reconvened at 8:15 P. M., at the Hotel Woodstock, New York, N. Y., with the same members present as at the afternoon session, with the exception of Mr. Safford.

At the suggestion of Professor Woodward, it was agreed to prepare a bibliography of books on Hydraulics published before 1860.

At the request of the Committee, Mr. Horton agreed to prepare a report on recent physical chemical investigations on Fluids and Fluid Friction.

It was also decided, at the suggestion of Professor Woodward, to prepare a uniform nomenclature for the use of the Committee.

Adjourned.

January 16, 1924.—A meeting of the Special Committee on Hydraulics Phenomena was held at the Engineering Societies Building, New York, N. Y. Present, S. M. Woodward (*Chairman*), M. L. Enger, R. E. Horton, A. T. Safford, and E. W. Schoder.

Mr. Horton reported that on the request of the Committee, Richard A. Hale, M. Am. Soc. C. E., will forward the data on pipe friction experiments prepared by the late Hiram Francis Mills, Hon. M. Am. Soc. C. E. Mr. Safford agreed to obtain the data and put it into form for consideration by the Committee.

Adjourned.

Announcements

The Reading Room of the Society is open from 9 A. M. to 6 P. M., and from 7 P. M. to 10 P. M., every day, except Sundays, New Year's Day, Washington's Birthday, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, and Christmas Day; during July and August, it is closed at 5 P. M.

Future Meetings

May 7, 1924.—8:00 P. M.—A regular business meeting of the Society will be held, and a paper by John A. Miller, Jr., Assoc. M. Am. Soc. C. E., entitled "The Secondary Effect of Certain Important River Bridges on Local Traffic Conditions", will be presented for discussion.

This paper is published in this number of *Proceedings*.

Spring Meeting, Atlanta, Ga., April 9-12, 1924

Wednesday, April 9, 1924.—At the Morning Session a paper* on "The Economics of Hydro-Electric Development", by Daniel W. Mead, M. Am. Soc. C. E., will be discussed. The Afternoon Session will be devoted to a discussion of a paper by W. R. Cole, Esq., President, Nashville, Chattanooga and St. Louis Railway, on "The Railroad and the Industrial Development of the South". Following an automobile excursion to points of engineering interest, there will be an Informal Dinner and Dance at the Piedmont Driving Club.

Thursday, April 10, 1924.—During the morning, there will be meetings of Local Section Representatives and Technical Divisions, the Power, Highway, and Sanitary Engineering Divisions having prepared programs.

In the afternoon, there will be an automobile excursion to points of scenic interest, followed by a Dinner and Social Evening at the East Lake Country Club.

Friday and Saturday, April 11 and 12, 1924.—There will be an Excursion by special train to the Power Developments of the Georgia Railway and Power Company in Northern Georgia.

Annual Convention, Pasadena, Calif., June 18-21, 1924

Fall Meeting, Detroit, Mich., October 23-25, 1924

* See Papers and Discussions, p. 417

Searches in the Library

As the Library of the American Society of Civil Engineers has been merged in the Engineering Societies Library, requests for searches, copies, translations, etc., should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York, N. Y., who will gladly give information concerning the charges for the various kinds of service. A more comprehensive statement in regard to this matter will be found on pages 35 and 36 of the Year Book for 1923.

New Local Sections of the American Society of Civil Engineers

The Constitutions of the following Local Sections have been approved by the Board of Direction since the list was prepared for the 1923 Year Book, pp. 116 *et seq.*:

Central Illinois Section (Constitution Approved by Board, January 17, 1924).

C. C. Williams, Chairman, *pro tem.*; C. C. Wiley, Secretary, *pro tem.*, 200 Highway Laboratory, University of Illinois, Urbana, Ill.

Milwaukee Section (Constitution Approved by Board April 16, 1923).

J. C. Pinney, President; A. Lawrie Kurtz, Secretary-Treasurer, 508 Market Street, Milwaukee, Wis.

North Carolina Section (Constitution Approved by Board, October 16, 1923).

Charles E. Waddell, President; Thorndike Saville, Secretary-Treasurer, University of North Carolina, Chapel Hill, N. C.

Syracuse Section (Constitution Approved by Board, April 16, 1923).

Louis Mitchell, President; Henry G. Throop, Secretary-Treasurer, 2117 South Geddes Street, Syracuse, N. Y.

New Student Chapters of the American Society of Civil Engineers

The following Student Chapters have been authorized by the Board of Direction since the list was prepared for the 1923 Year Book, pp. 21 *et seq.*:

College of the City of New York, Organized 1923.

William Hoffberg, President; Bruce C. Hayter, Secretary, College of the City of New York, New York, N. Y.

Marquette University, Organized 1923.

M. Francis Linnan, President; Andrew L. Wapp, Secretary, 908 24th St., Milwaukee, Wis.

Missouri School of Mines and Metallurgy, Organized 1924.

Carl W. B. Sitzler, President; John W. Fleming, Secretary, 404 Main Street, Rollo, Mo.

Rice Institute, Organized 1923.

W. T. Alexander, Jr., President; Paul E. Nash, Secretary-Treasurer, Rice Institute, Houston, Tex.

University of Alabama, Organized 1923.

James T. Meador, Secretary, University of Alabama, University, Ala.

University of Michigan, Organized 1923.

R. W. Preston, President; William K. Saunders, Secretary, 722 Dewey Avenue, Ann Arbor, Mich.

University of North Dakota, Organized 1923.

Ray V. Tilly, President; Richard B. Black, Secretary-Treasurer, 1002 Belmont Avenue, Grand Forks, N. Dak.

University of Tennessee, Organized 1923.

B. R. McBath, President; H. N. Estes, Secretary-Treasurer, University of Tennessee, Knoxville, Tenn.

Membership

(From February 6 to March 2, 1924)

Additions

MEMBERS		Date of Membership.
ABELL, HORACE AVERY. Engr., Way and Structures, New York State Rys., 267 State St. (Res., 1109 Culver Rd.), Rochester, N. Y.		Feb. 25, 1924
ALBRECHT, ERDMAN JULIUS. Contr. Engr., 35 South Dearborn St., Chicago, Ill	Assoc. M. M.	Aug. 9, 1920 Feb. 25, 1924
ALLEN, JOHN SEGAR. Archt.'s Supt. of Constr. and Res. Engr. for the State of Connecticut, New Britain, Conn. (Res., 1057 Pleasant St., Worcester, Mass.)		Feb. 25, 1924
COOKINHAM, RICHARD SHERMAN. Civ. Engr., 309 Foster Bldg., Utica, N. Y.	Assoc. M. M.	June 30, 1911 Feb. 25, 1924
CORBETT, WALTER EDWARD. Supt. and Constr. Mgr., Lock Joint Pipe Co., Box 758, Claremore, Okla		Feb. 25, 1924
DUNHAM, FRED CALVIN. Prin. Asst. Constr. Engr., Spokane County Court House (Res., 424 West Mansfield Ave.), Spokane, Wash.	Assoc. M. M.	May 7, 1913 Jan. 14, 1924
DYER, ALBERT HENRY. (A. H. Dyer Co.), 304 East 6th St., Fremont, Nebr.		Feb. 25, 1924
ENSIGN, CHARLES HERBERT. (Ensign & Snow), 517 National City Bank Bldg., Cleveland (Res., 3340 Euclid Heights Boulevard, Cleveland Heights City), Ohio		Feb. 25, 1924
FINDLAY, CHARLES OWEN. Civ. Engr., 646 Mulberry St., Clarksburg, W. Va.		Feb. 25, 1924
HAMILTON, WILLIAM EDWARD. Constr. Mgr., Sanderson & Porter, 52 William St., New York, N. Y.	Jun. Assoc. M. M.	Jan. 3, 1911 Sept. 2, 1914 Feb. 25, 1924
HENDERSON, GEORGE HENRY. Chf. Engr., State Board of Public Roads, 14 Linden Ave., Rumford, R. I.		Feb. 25, 1924
HINCHMAN, THEODORE HENRY. (Smith, Hinchman & Grylls), 800 Marquette Bldg., Detroit, Mich.		Feb. 25, 1924
LIVINGSTON, HAROLD TODD. Div. Engr., C. R. I. & P. Ry. (Res., 105½ Johnson), Little Rock, Ark.		Feb. 25, 1924
MONTGOMERY, JAMES FLOURNOY. Div. Engr., St. L. S. W. Ry., Box 682, Mt. Pleasant, Tex.		Feb. 25, 1924
SHINN, JOHN BROGNARD. Engr., Dept. of Public Works, Richmond, Va.		Feb. 25, 1924
SIAS, ROBERT MITCHELL. Chf. Engr., Galveston Wharf Co. (Res., 1314 Twenty-fifth St.), Galveston, Tex.		Feb. 25, 1924
SULLIVAN, THOMAS FRANCIS. Chairman, Boston Transit Comm. (Res., 1736 Columbia Rd.), Boston, Mass.		Feb. 25, 1924
TAYLOR, ERNEST SUCCOP. Engr. of Designs and Constr., Pittsburgh Coal Co., Box 64, Pittsburgh, Pa.		Feb. 25, 1924
THROOP, HENRY GROSVENOR. Supt. for Contr., F. J. Baker (Res., 2117 South Geddes St.), Syracuse, N. Y.	Assoc. M. M.	June 30, 1911 Feb. 25, 1924
YOUNG, GORDON RUSSELL. Maj., Corps of Engrs., U. S. A., Room 2711, Munitions Bldg., War Dept., Washington, D. C.		Feb. 25, 1924

ASSOCIATE MEMBERS

	Date of Membership.
ACKER, CLAIRE DEPEW. Supt. of Constr., P. J. Walker (Res., 2528 Polk St.), San Francisco, Calif.	Jan. 14, 1924
ALDERTON, HENRY ARNOLD, JR. Project Engr., State Highway Dept., 523 West Tijeras Ave., Albuquerque, N. Mex. — Jun.	Nov. 9, 1920
— Assoc. M.	Feb. 25, 1924
ALTHAR, HOMER CUSTER. City Engr., Box 353, Bellaire, Ohio.	Feb. 25, 1924
AQUINO Y ANGELES, ALEJO. Dist. Engr., Province of Iloilo, Box 104, Iloilo, Iloilo, Philippine Islands. — Jun.	Sept. 10, 1918
— Assoc. M.	Nov. 26, 1923
BANCROFT, EDWARD NATHANIEL. Chf. Civ. Engr., Trinidad Sugar Co., Central Trinidad, Trinidad, Cuba.	Nov. 26, 1923
BANNERMAN, ROBERT LEE. Div. Engr., State Road Dept. of Florida, Marianna, Fla.	Feb. 25, 1924
BEISEL, NORMAN JACOB. Gen. Mgr., The Pottsville Water Co., 221 South Center St., Pottsville, Pa.	Feb. 25, 1924
BRECKINRIDGE, GEORGE CASTLEMAN. Supt., Peabody Coal Co., Shelburn, Ind.	Feb. 25, 1924
DITTMAR, ALBERT LOUIS. Asst. Dist. Engr., Pennsylvania State Highway Dept., 29 Queen St., Wellsboro, Pa.	Feb. 25, 1924
GRIFFIN, ALMERN FREDERICK. Div. Engr., Miami Conservancy Dist., and Engr. for City of Troy, 153 North Market St., Troy, Ohio	Feb. 25, 1924
GROMFINE, JOHN JACOB. Lieut., C. E. C., U. S. N.; Asst. to Public Works Officer, U. S. Navy Yard, Puget Sound, Bremerton, Wash.	Jan. 14, 1924
HEIM, ARTHUR IRVING. Structural Designer, Union Miniere du Haut-Katanga, 25 Broadway, New York, N. Y. — Jun.	Jan. 17, 1921
— Assoc. M.	Feb. 25, 1924
HEMMINGS, HARRY HOWARD. Asst. Engr., H. M. Lewis, 130 East 22d St., New York (Res., 639 East Third St., Brooklyn), N. Y.	Feb. 25, 1924
HODGES, RICHARD MCKANDLISH. Structural Steel Draftsman, Grade C, Tunnel Div., Board of Estimate and Apportionment, Room 2700, Municipal Bldg., New York, N. Y.	Feb. 25, 1924
KING, KENNETH KYLE. Asst. Engr., Fuller & Maitland, 206 Walsix Bldg., Kansas City, Mo.	Feb. 25, 1924
LEMAY, VENANCE. Constr. Engr., Standard Oil Co. of New York, Levant Branch, Constantinople, Turkey.	Jan. 14, 1924
LOVEJOY, CARL HOWARD. Highway Engr., Pittsburgh Testing Laboratory; 27 Urquhart Bldg., Little Rock, Ark.	Jan. 14, 1924
MCNEW, JOHN THOMAS LAMAR. Asst. Prof. of Civ. Eng., Agri. and Mech. Coll. of Texas, College Station (Res., Bryan), Tex.	Feb. 25, 1924
MAHER, JOHN RALPH, SR. County Highway and Drainage Engr., Hardin County, Eldora, Iowa.	Feb. 25, 1924
MILLER, JOHN ANDERSON, JR. Asst. Editor, *Electric Railway Journal*, 10th Ave. at 36th St., New York, N. Y. — Jun.	June 19, 1922
— Assoc. M.	Feb. 25, 1924
PARKER, IRVING HOLMAN. Constr. Engr., Willite Road Constr. Co. of West Virginia, Box 214, Morgantown, W. Va.	Nov. 26, 1923
PHILLIPS, VANN RICHARD. With Ford, Bacon & Davis, 115 Broadway, New York, N. Y. (Res., 357 North Maple Ave., East Orange, N. J.)	Feb. 25, 1924

ASSOCIATE MEMBERS—(*Continued*)

	Date of Membership.
REEDER, WILLIAM WALLACE. Chf. Engr., John H. McClatchy (Res., 915 Kenmore Rd.), Philadelphia, Pa	Feb. 25, 1924
RUBICAM, LESLIE HUBERT. Locating Engr., State Highway Dept., Port Angeles, Wash	Jan. 14, 1924
SILSBEE, JOHN ALONZO. Cons. Engr., Box 669, Okmulgee, Okla	Jan. 14, 1924
SPRY, FREDERICK JOSIAH. Instr. in Railroads, Cornell Univ., Lincoln Hall, Cornell Univ., Ithaca, N. Y	Feb. 25, 1924
STADTFELD, NICOLAAS THEODORUS FRANCISCUS. Asst. Engr., Board of Estimate and Apportionment, New York (Res., 9466 Jefferson Ave., Queens), N. Y	Feb. 25, 1924
THOMAS, CHARLES OSCAR. Prin. Asst. Engr. for A. M. Lund, 527 Southern Trust Bldg., Little Rock, Ark. — Jun.	Oct. 10, 1921
— Assoc. M.	Feb. 25, 1924
TIETZEL, ALBERT MICHAEL. Designer, Mechanical Development, Corning Glass Works, 107 East 2d St., Corning, N. Y. — Jun.	Mar. 11, 1919
— Assoc. M.	Sept. 10, 1923
TOTTI Y TORRES, ETIENNE. Chf. Engr., Am. R. R. of Porto Rico, Box 634, San Juan, Porto Rico	Jan. 14, 1924
TRAMS, THEODORE HERMAN. Instr., Civ. Eng. Dept., Marquette Univ., 1200 Sycamore St., Milwaukee, Wis	Jan. 14, 1924

AFFILIATES

DURBIN, HARVEY RANDOLPH. Chf. Chemist, Texas Portland Cement Co., and International Cement Corporation of New York, 1001 Praetorian Bldg., Dallas, Tex	Jan. 14, 1924
ELLIOTT, EARL CONARROE. City Mgr., City Hall, Wichita, Kans	Feb. 25, 1924

JUNIORS

ANDERSON, RUSSELL AVERIL. Res. Engr., Hoad, Decker & Drury, Ann Arbor, Mich	Nov. 26, 1923
ANDERSON, VICTOR CHARLES. 1338 Florencedale Ave., Youngstown, Ohio	Feb. 25, 1924
BARNES, ARTHUR FOREST. Asst. Civ. Engr., Water Dept., 5360 Pershing Ave., St. Louis, Mo	Jan. 14, 1924
BARNES, GEORGE ERIC. Dept., Civ. Eng., Univ. of Florida, Gainesville, Fla	Oct. 15, 1923
BENEDICT, THOMAS HAROLD. 150 West 91st St., New York, N. Y	Sept. 10, 1923
BONNEY, ORRIS. 60 Jason Ave., Columbus, Ohio	Feb. 25, 1924
BROOCKMANN, HERMAN. Draftsman and Layout Engr., Sanderson & Porter, 52 William St., New York (Res., 15003 Eighty-eighth Ave., Jamaica), N. Y	Oct. 15, 1923
CAGLE, CECIL COBB. Insp. and Instrumentman with A. D. Duck (Res., 4509 Wesley St.), Greenville, Tex	Feb. 25, 1924
CLAIR, MILES NELSON. Instr., Civ. Eng., Drexel Inst. (Res., 5247 Market St.), Philadelphia, Pa	Feb. 25, 1924
CONKLING, FRANK ELLSWORTH, JR. Civ. Engr., Atlantic Fruit Co., Cayo Mambi, Oriente, Cuba	Jan. 14, 1924
CUTTER, HOWARD DAVIS, JR. Care, South Eastern Underwriters Assoc., Box 1743, Atlanta, Ga	Sept. 10, 1923

JUNIORS—(*Continued*)

	Date of Membership.
FISHER, JULIAN ALSTON. Field Engr., E. H. Mosher, 539 Munsey Bldg. (Res., 817 North Carolina Ave., S. E.), Washington, D. C.	Feb. 25, 1924
GAY, ARCHER BAILEY. Office Engr., State Highway Comm., 803 State Office Bldg., Richmond, Va.	Feb. 25, 1924
GILBERT, JACK HITE. Office Engr., State Highway Dept., 409 East Main St., Jackson, Tenn.	Feb. 25, 1924
LEAVITT, NATHAN HAIME. Draftsman and Designer, Woods Brothers Constr. Co., 132 South 13th St., Lincoln, Nebr.	Feb. 25, 1924
MCCROSKY, THEODORE TREMAIN. Instr., Eng. Mech., Sheffield Scientific School, Yale Univ. (Res., 51 Prospect St.), New Haven, Conn.	Feb. 25, 1924
MOWER, CHARLES MASON, JR. Asst. Engr., Charles B. Hawley & Co., Inc., Box 233, Oakland, Md.	Feb. 25, 1924
PARKER, GEORGE MASON. Junior Engr., U. S. Engr. Office, Fort Norfolk, Norfolk, Va.	Feb. 25, 1924
REYNAUD, OSCAR FIELD. Salesman, Asphalt Sales Dept., The Texas Co. (Res., 1804 McGowan Ave.), Houston, Tex.	Feb. 25, 1924
SPELMAN, MALCOLM STEWART. Junior Engr., John R. Spelman, 405 Lexington Ave., New York (Res., 219 Lakeview Ave., Rockville Center), N. Y.	Feb. 25, 1924
WOLF, RICHARD JARRETT. Draftsman, Dept. of City Transit, 5817 North 13th St., Philadelphia, Pa.	Feb. 25, 1924

Reinstatements

MEMBERS	Date of Reinstatement.
GADD, ROBERT FOSTER	Feb. 11, 1924
LEE, ALBERT WALTER	Feb. 11, 1924
REEVES, CARL HOWELL	Feb. 11, 1924
WILSON, PERCY HARTSHORNE	Feb. 11, 1924
ASSOCIATE MEMBERS	
ALLTON, ROBERT ADAMS	Feb. 11, 1924

Resignations

MEMBERS	Date of Resignation.
CHADBOURN, WILLIAM HOBBS	Feb. 11, 1924
GOEDECKE, WILLIAM	Feb. 11, 1924
HAYDEN, ARTHUR GUNDERSON	Feb. 11, 1924
ASSOCIATE MEMBERS	
BLISS, TULLA ETHAN	Feb. 11, 1924
BOND, ARTHUR HAZARD	Feb. 11, 1924
CHILDS, JOHN CHAUNCEY	Feb. 11, 1924
FISHER, GEORGE JOSEPH	Feb. 11, 1924
FORSYTH, HAROLD FREDERICK	Feb. 11, 1924

ASSOCIATE MEMBERS—(*Continued*)	Date of Resignation.
KETCHAM, VALENTINE ODELL	Feb. 11, 1924
MAYELL, ALBERT JEFFERSON	Feb. 11, 1924
PHILLIPS, THEODORE CLIFFORD	Feb. 11, 1924
STANTON, WILLIAM MACY	Feb. 11, 1924
WELLES, THEODORE LADD, JR.	Feb. 11, 1924
AFFILIATES	
CHURCH, IRVING PORTER	Feb. 11, 1924

Deaths

COANE, JOHN MONTGOMERY. Elected Member, November 4, 1908; died December 28, 1923.

DILWORTH, EDWARD COE. Elected Affiliate, June 6, 1911; Associate Member, December 3, 1913; Member, October 15, 1923; died December 24, 1923.

KENDRICK, JOHN WILLIAM. Elected Member, June 6, 1883; died February 16, 1924.

MAURICE, CHARLES STEWART. Elected Member, May 15, 1872; died February 20, 1924.

WINSLOW, FREDERIC IRVING. Elected Member, May 6, 1914; died February 21, 1924.

Total Membership of the Society, March 4, 1924

Members	4 854	
Associate Members	5 332	
Corporate Members		10 186
Honorary Members		13
Juniors		626
Affiliates		160
Fellows		9
Total		10 994

Employment Service

The Engineering Societies Employment Service is under the joint management of the National Societies of Civil, Mining, Mechanical, and Electrical Engineers as a co-operative Bureau available only to their membership, and maintained by the contributions from the Societies and their individual members who are directly benefited.

Men Available.—Under this heading, brief announcements will be published without charge. These announcements will not be repeated, except on request received after an interval of one month. Names and records will remain in the active files of the Bureau for a period of three months and are renewable on request. Notice for *Proceedings* should be addressed to Employment Service, 33 West 39th Street, New York, N. Y., and should be received prior to the first of the month.

Opportunities.—A Bulletin of engineering positions available is published weekly and is available to members of the Societies concerned at a subscription rate of $3 per quarter, or $10 per annum, payable in advance. Positions which are not filled promptly as a result of publication in the Bulletin, may be announced herein.

Voluntary Contributions.—Members obtaining positions through the medium of this Service are invited to co-operate with the Societies in the financing of the work by nominal contributions made within thirty days after placement, on the basis of $10 for all positions paying a salary of $2 000 or less per annum; $10 plus 1% of all amounts in excess of $2 000 per annum; temporary positions (of one month or less), 3% of total salary received. The income contributed by the members, together with the finances appropriated by the four Societies named, will be sufficient, it is hoped, not only to maintain but to increase and extend the service.

Replies to Announcements.—Replies to announcements published herein, or in the Bulletin, should be addressed to the key number indicated in each case, with a two-cent stamp attached for re-forwarding, and forwarded to the Employment Service at the address given. Replies received by the Bureau after the positions to which they refer have been filled, will not be forwarded.

MEN AVAILABLE

AVAILABLE JUNE 1, 1924; Graduate B. S. in C. E. of College of Engineering, University of Montana. Desires permanent employment under consulting engineer or contractor in Southwestern United States. Experience is a six-year apprenticeship in civil engineering as instrumentman, inspector and assistant superintendent. $200 to $300. B–1069.

CIVIL ENGINEER-EXECUTIVE, with unusual combination of technical and business training, wishes to connect with proposition in which he can make full use of his double line of experience, embracing structural work, reinforced concrete, water power, bridges, buildings, dams, project investigations, statistics, accounting, industrial systems, department head, production manager. B–2310.

GRADUATE ENGINEER, Assoc. M. Am. Soc. C. E.; age 36; married. Twelve years' experience on design, estimating, valuation, and construction, buildings and general construction work, desires responsible position. Prefers position of executive, manager, purchasing or superintendent. Salary, $300. B–2775.

CIVIL ENGINEER; married; 21 years construction experience: Railroads, 8 years; street railways, roadways, and tunnels, 4 years; hydro-electric projects, hollow dams, granite and clay foundations, 4 years; city building, water, sewerage, and district heating plant, 2 years; private practice, general engineering, land surveys, deed descriptions, 3 years. Employed on foundation valuation work. Open for engagement. New York City preferred. B–5228.

STRUCTURAL AND SALES ENGINEER; Technical graduate; age 37. Seventeen years' experience with engineers, contrac-

tors, and steel fabricators on detailing, estimating, designing, and selling. Has thorough knowledge of structural steel, is capable of taking charge of engineering and sales of medium-sized fabricating plant. Good executive. Present salary, $4 000. B–5797.

CONSTRUCTION OR CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; Technical graduate; American; age 33; married. Ten years' experience on construction, including bridges, power-house, hydro-electric, dry dock, and highways. Desires engagement. Available at once. B–5950.

ENGINEER EXECUTIVE, M. Am. Soc. C. E., Am. Soc. Mech. Engrs., Am. Inst. M. and M. E., and Assoc. M. A. R. E. A.; age 38; Graduate C. E.; good handler of men. Experienced in railroad work, building construction, development work, and industrial management. Although at present employed is desirous of making a change. Willing to go anywhere. Can furnish references from all previous employers. B–5975.

MEMBER AM. SOC. C. E.; age 43; broad experience in design and construction, desires correspondence with consulting engineers and construction companies who will be interested in getting a high-class man as general superintendent. Any good location will be considered. Salary or terms of engagement to be determined. B–6636.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; Technical graduate; age 37. Six years, railroad location, design, and construction; three years, subway construction; three years, industrial engineer; three years, cost engineer, municipal engineering. Specializing on office management and cost distribution for highway and sewer construction. Experienced in office and field. B–6864.

RECENT GRADUATE, Civil Engineer; age 24; desires connection with opportunity for advancement. One year's experience in structural and topographical drafting and four months' experience on outside building construction work. B–6761.

MEMBER, AM. SOC. C. E.; age 43; married; healthy and active. More than twenty years varied experience, largely along railway lines, including construction, maintenance, and operation, also, plans, estimates, and reports. Available at reasonable notice. Prefers connection with engineering firm in Eastern States. Salary or terms of engagement to be determined. Interview solicited. B–6912.

HIGHWAY ENGINEER-EXECUTIVE, M. Am. Soc. C. E.; middle-aged; married. Twelve years' railroad and general civil engineering experience; 12 years' specializing in all branches highway work, location, design, construction, maintenance, economics, modern theory, and practice. Mature judgment. At present with important highway organization. Desires responsible work in large highway enterprise. Eastern States preferred. Available at reasonable notice. B–6972.

STRUCTURAL ENGINEER; Technical graduate. Twenty years' experience, designing, detailing, checking, estimating, superintending, selling steel and reinforced concrete structures, bridges, and buildings. Experienced also in manufacturing plants, millwright layouts, and power transmission. Position wanted with architect, engineer, or contractor. Vicinity of Philadelphia, Pa., or New York, N. Y. preferred. B–7113.

GRADUATE CIVIL ENGINEER; age 41; married. Eighteen years responsible engineering experience, including two years on heavy tunnel construction; three years on design of dams, bridges, and reinforced concrete irrigation structures; six years, in university teaching; two years as chief of department of civil engineering in large university; last three years, supervising construction of $3 000 000 irrigation system. Desires university professorship in civil engineering, or responsible position in irrigation or water-power construction. B–7308.

CIVIL ENGINEER, M. Am. Soc. C. E. Extensive varied experience covering railway, structural, water supply, sewage disposal, irrigation, and hydraulic power work, industrial plants, and general consulting work. Open for engagement in responsible position. Familiar with Middle West and Pacific Coast and would consider position with Investment or Development Company. B–7379.

PLANT ENGINEER; Technical graduate; American; married. Twenty years' varied engineering and executive experience on industrial design, construction, plant maintenance and operation, development and improvement of processes and equipment. Design and installation of concrete, steel, and wood structures, machinery, furnaces, kilns, conveying systems, power plant, and general equipment. Employed, but desires change to Eastern location. B–7391.

CIVIL ENGINEER, M. Am. Soc. C. E.; fifteen years' experience, field and office, railroads, canals, reclamation, industrial plant, buildings, terminals, water-front, and general construction. Past several years engineer and executive, supervising design, plans, specifications, and placing under construction, important work in large organization, specializing in harbor, terminal, and industrial projects. B–7393.

EXECUTIVE-CONSTRUCTION ENGINEER, M. Am. Soc. C. E.; M. A. I. M. E.; age 39; married; technical education. Eighteen years' wide experience covers concrete and steel buildings and bridges, dams, mine plant construction, and machine installation, oil exploitation, railroad location and construction. Speaks Spanish. Available at short notice. B–7444.

GRADUATE CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; age 38; married. Fifteen years' varied experience in irrigation, railroad and highway location, construction, and maintenance. Past five years and, at present, engaged as District Engineer in important Western State highway organization, in charge of all district activities of Department. Available at reasonable notice. B–7469.

CIVIL ENGINEER; thirty years' active work, Central and South America, the Orient, China, Japan, and the United States. Familiar with railroad construction, preliminary surveys, and location. Experienced in reinforced concrete work,

foundation work, wharf work, topographical surveying, etc. Prefers long-time foreign engagement. Can furnish high-grade instruments for field and office. B–7494.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; Technical graduate; married; age 36; desires position with sales department of large industrial concern or consulting engineers on municipal work or municipality. Experience, eight years as municipal engineer and five years private practice on municipal work. At present located in North Central States; will go anywhere in United States. B–7523.

STRUCTURAL ENGINEER; Graduate in mining and civil engineering; specialty is building construction; desires to connect with engineer, contractor, or architect as general assistant or field engineer. Can design, handle general business matters and office routine, or manage maintenance and construction work. Registered. Prefers work in South. B–7544.

CIVIL ENGINEER, Jun. Am. Soc. C. E.; University graduate; age 25. One year, assistant resident engineer on concrete highway construction, Massachusetts Highway Department; one year and six months with firm of hydraulic engineers specializing on water-waste surveys; four months with consulting engineer on design of steel and concrete buildings. Position wanted with engineer or contractor anywhere in United States. B–7560.

CIVIL ENGINEER; age 49; with wide experience in water-works, water supply, and water purification as consultant, engineer in charge, design and construction, sales engineering work as sales manager and district sales manager. Sales manager, district representative, or sales engineering preferred to detail design. Location East, between Boston, Mass., and Philadelphia, Pa. B–7583.

ENGINEER, M. Am. Soc. C. E. and M. A. R. E. A.; Graduate, Cornell, C. E.; age 50; married. Sixteen years in full charge of location, construction, and maintenance of steam and electric railroads; Five years, bituminous coal mining; resigned railroad position to accept commission as Major, Engineers, U. S. A., during World War, now hold commission in E. O. R. C. Will go anywhere. References given. B–7594.

GRADUATE CIVIL ENGINEER; age 44; married; good health; designing and supervising engineer on municipal improvements of all kinds. Extended experience in executive and business capacities. Will give up consulting practice for position as manager or superintendent of water or light plant. Salary reasonable. Any location. B–7595.

VERSATILE, ADAPTABLE, Graduate C. E.; age 27. Six years' experience in architecture, engineering, field and office. Desires position as responsible assistant to New York architect, consulting engineer, or contractor. Experienced as architect, engineer, party chief, squad boss, designer and checker, on industrial, power plant, and city engineering work. Knowledge of New York code, artistic ability, can handle men. Licensed Civil Engineer. B–7600.

Engineering Societies Library. Book Notices*

(From February 1 to February 29, 1924)

The statements made in these notices are taken from the books themselves, and this Society is not responsible for them.

APPRAISERS' AND ADJUSTERS' HANDBOOK.

By William Arthur. N. Y., U. P. C. Book Co., 1924. 616 pp., diagrams, tab., 7 x 5 in., fabrikoid. $5.00.

This is a handbook of data for engineers, owners of real estate, and others interested in the valuation of buildings and structures. Part 1 deals largely with general principles, square foot and cubic foot costs, and the approximate estimation of the cost of buildings. Part 2 explains how the cost of the various details may be found. Included in it are many useful tables showing the amount of work done per hour in building work of various kinds.

BLASTING WITH HIGH EXPLOSIVES.

By W. Gerard Boulton. Lond. and N. Y., Isaac Pitman & Sons, 1923. 108 pp., illus., diagrams, tab., 7 x 5 in., cloth. $1.50.

The aim of this work is to call attention to the great superiority of high explosives over black powder, and to give those unaccustomed to their use simple, clear directions for using them safely and economically. The directions cover the selection of the proper explosives, methods of handling and firing them, and the use of explosives in tunneling, mining, under water, and for various other purposes.

ECONOMICS OF MOTOR TRANSPORTATION.

By George W. Grupp. N. Y., D. Appleton & Co., 1923. 414 pp., illus., 9 x 6 in., cloth. $5.00.

This book attempts to cover the entire field in as much detail as is possible within the limits of a single volume, with due regard to the needs of students of transportation, manufacturers of motor vehicles, and owners or prospective owners of trucks. Attention is concentrated on the principles involved in road transport and on the methods of applying these principles successfully. Among the subjects discussed are the replacement of horse wagons, selection of trucks, track operation, loading, cost accounting, and omnibus transportation.

HISTORY OF THE UNION PACIFIC.

By Nelson Trottman. N. Y., Ronald Press Co., 1923. 412 pp., illus., 9 x 6 in., cloth. $5.00.

Although the Union Pacific was the first, and for many years, the only transcontinental railroad, and has frequently been in the limelight during the sixty years of its existence, this book is the first to assemble its story in its entirety. The work gives a general account of the railroad from its birth, in 1862, to the end of 1921. The story is confined to financial and economic questions.

LIFE OF FRANCIS AMASA WALKER.

By James Phinney Munroe. N. Y., Henry Holt & Company, 1923. 449 pp., port., 9 x 6 in., cloth. $4.00.

General Walker has many claims to fame as a soldier, an economist, and a public official, but to engineers he is best known for his work at the Massachusetts Institute of Technology, of which he was President from 1881 to 1897. This biography, published twenty-five years after General Walker's death, gives a full account of his busy life and a careful estimate of his contributions to the reforms in government, in education and in social administration for which he labored.

PREPARATION OF REPORTS; ENGINEERING, SCIENTIFIC, ADMINISTRATIVE.

By Ray Palmer Baker. N. Y., Ronald Press Co., 1924. 468 pp., illus., diagrams, 8 x 5 in., cloth. $3.50.

Dr. Baker's work, although intended primarily for students, contains information on the preparation of reports which has never before been brought together and which will be useful for reference to those engaged in active practice. Various types of reports—information reports, examination reports, recommendation reports, progress reports, and research reports—are analyzed systematically. The reports used are actual examples, selected from a great variety.

* Unless otherwise specified, the books in this list have been donated by publishers.

RURAL HIGHWAY PAVEMENTS; MAINTENANCE AND RECONSTRUCTION.

By Wilson G. Harger. N. Y., McGraw-Hill Book Co., 1924. 637 pp., illus., diagrams, tab., map, 9 x 6 in., cloth. $6.00.

This is the second book of a series presenting the road problem from the point of view of the engineer in charge of construction. It contains the basic data ordinarily used in the design, construction, maintenance, and reconstruction of rural highways, and is written to emphasize and illustrate the application of engineering principles that have been more or less befogged by non-technical propaganda. Its main value, the author states, probably lies in its definite data on design, its discussions of the suitability of different pavements, and in the official reports which apply the principles of design to specific cases.

SANDS AND CRUSHED ROCKS.

By Alfred B. Searle. (Oxford Technical Publications.) Lond., Henry Frowde, and Hodder & Stoughton, 1923. 2 vol., illus., tab., 8 x 5 in., cloth. $17.50, 2 vol. (Gift of Oxford University Press. American Branch.)

The author aims to meet the lack of a work in the English language which covers the subject in all its aspects. The book summarizes the geological, chemical, and mineralogical information on sands which is likely to prove of value to those engaged in digging, selling, or using sand, and gives special attention to the properties that are desirable or harmful for various purposes. The origin, formation, occurrence, distribution, characteristics and properties of sands, and methods of examining and testing them are discussed in the first volume. The methods of mining, crushing and grinding, purifying, sizing, and storing sands are then described. The various uses of sand, in brick-making, concrete, cements, plasters, road building, metallurgy, refractories, agriculture, filtration, pottery, glass-making, abrasives, explosives, etc., are discussed in the second volume.

TOWN PLANNING AND TOWN DEVELOPMENT.

By S. D. Adshead. N. Y., E. P. Dutton & Co. 204 pp., illus., plans, 9 x 6 in., cloth. $5.00.

This book, which is intended as the first of a series, is described by its author as "an attempt to prepare for the student a 'primer' dealing with the social, economic, and administrative aspects only.' The presentation is the result of experience gained in lecturing to students at London University, while the matter is the result of practical experience in preparing schemes for town planning and of a study of published works.

Additions to the Reading-Room

ELEMENTARY HYDRAULICS

By F. W. Medaugh. N. Y., D. Van Nostrand Co., 1924. 144 pp., illus., diagrams, 8 x 5½ in., cloth. $2.00.

This book was intended, it is stated, primarily as a textbook for elementary courses in hydraulics. The problems have been arranged to a large extent in two sets so that one set may be used one year and the other the following year. The author hopes that the radically different methods which he has adopted in presenting some parts of the subject will justify the publication of this work.

THE PERSONAL RELATION IN INDUSTRY

By John D. Rockefeller, Jr. N. Y., Boni and Liveright (1923). 149 pp., 8 x 5½ in., cloth. $1.75.

This book consists of addresses given by the author on various occasions. No effort has been made to change their form, the publishers believing that they will thus make a substantial contribution to the ever-important subject of industrial relationships.

Current Civil Engineering Literature

Key to Abbreviated References to Publications Indexed*

Abbreviated References.	Publication.	Place.
Am. C. Inst.	*American Concrete Institute, Proceedings* (Y.)	Detroit
A. I. E. E.	*American Institute of Electrical Engineers, Journal* (M.)	New York
A. R. E. A.	*American Railway Engineering Association, Proceedings* (Y.)	Chicago
A. S. T. M.	*American Society for Testing Materials, Proceedings* (Y.)	Philadelphia
Am. Soc. C. E.	*American Society of Civil Engineers, Proceedings* (M.)	New York
Am. Soc. Mun. Impvts.	*American Society for Municipal Improvements, Proceedings* (Y.)	New York
Am. W. W. Assoc.	*American Waterworks Association, Journal* (Bi-M.)	Baltimore
Am. Wood Prs. Assoc.	*American Wood Preservers Association, Proceedings* (Y.)	Chicago
Ann. P. et C.	*Annales des Ponts et Chaussées* (Bi-M.)	Paris
Ann. T. P. Belg.	*Annales des Travaux Publics de Belgique* (Bi-M.)	Brussels
Assoc. Ing. Gand	*Annales de l'Association des Ingénieurs sortis des Ecoles Spéciales de Gand* (Q.)	Ghent
Bost. Soc. C. E.	*Boston Society of Civil Engineers, Journal* (M.)	Boston
Can. Engr.	*Canadian Engineer* (W.)	Toronto
Cem. Eng.	*Cement and Engineering News* (M.)	Chicago
Cornell C. E.	*Cornell Civil Engineer* (M.)	Ithaca
Dock & Harbour	*Dock and Harbour Authority* (M.)	London
Eng.	*Engineering* (W.)	London
Eng. & Contr.	*Engineering and Contracting* (W.)	Chicago
Eng. Inst. Can.	*Engineering Institute of Canada, Journal* (M.)	Montreal
Eng. N. R.	*Engineering News-Record* (W.)	New York
Engrs. Soc. Pa.	*Engineers' Society of Pennsylvania, Journal* (M.)	Harrisburg
Engrs. Soc. W. Pa.	*Engineers' Society of Western Pennsylvania, Journal* (M.)	Pittsburgh
Engr.	*Engineer* (W.)	London
Engrs. & Eng.	*Engineers and Engineering, Engineers' Club of Philadelphia* (M.)	Philadelphia
Gen. Civ.	*Le Génie Civil* (W.)	Paris
Gesund. Ing.	*Gesundheits Ingenieur* (W.)	Munich
Inst. C. E.	*Institution of Civil Engineers Minutes of Proceedings* (Q.)	London
Inst. Mun. & Co. Engrs.	*Institution of Municipal and County Engineers, Journal* (W.)	London
Int. Ry. Cong. Assoc.	*International Railway Congress Association, Bulletin* (M.)	Brussels
Land. Arch.	*Landscape Architecture* (M.)	Harrisburg
Mech. Eng.	*Mechanical Engineering* (M.) *Journal of the American Society of Mechanical Engineers*	New York
Mil. Engr.	*Military Engineer* (M.)	Washington
Min. & Metal.	*Mining and Metallurgy* (M.) *American Institute of Mining Engineers*	New York
Mun. & Co. Eng.	*Municipal and County Engineering* (M.)	Indianapolis
N. E. W. W. Assoc.	*New England Water Works Association, Journal* (M.)	Boston
N. Y. R. R. Club	*New York Railroad Club, Proceedings* (M.)	Brooklyn
Oest. Ing. Arch. Ver.	*Oesterreichischer Ingenieur und Architekten Verein, Zeitschrift* (F.)	Vienna
Power	*Power* (W.)	New York
Rev. Gen.	*Revue Générale des Chemins de Fer* (M.)	Paris
Ry. Age	*Railway Age* (W.)	New York
Ry. Eng. & Main.	*Railway Engineering and Maintenance* (M.)	Chicago
Ry. Rev.	*Railway Review* (W.)	Chicago
Schw. Bauz.	*Schweizerische Bauzeitung* (W.)	Zurich
Sci. Am.	*Scientific American* (M.)	New York
Soc. Ing. Civ. Fr.	*Société des Ingénieurs Civils de France, Mémoires et Comptes Rendus* (Q.)	Paris
Ver. deu. Ing.	*Verein deutscher Ingenieure, Zeitschrift* (W.)	Berlin
West. Ry. Club.	*Western Railway Club, Proceedings* (M.)	Chicago
West. Soc. Engrs.	*Western Society of Engineers, Journal* (M.)	Chicago
Zeit. Bau.	*Zeitschrift fur Bauwesen* (Q.)	Berlin
Z. d. Bauver.	*Zentralblatt der Bauverwaltung* (W.)	Berlin

* Y = Yearly; Q = Quarterly; M = Monthly; F = Fortnightly; W = Weekly.

B. Applied Mechanics

a. Mechanics of Solids

4. Riveted Systems

Berechnung gedrückter Tragwerksteile mit Rücksicht auf Knickung.* (Calculation of Compression Members of Trusses with Regard to Rupture.) Oest. Ing. Arch. Ver. Jan. 25, '24.

7. Pulverulent Masses (Earth Pressure)

Step-Retaining Walls at Astoria, Oregon, U. S. A.* Eng. Feb. 1, '24.

Highway Embankment Construction Across Tidal Marsh.* W. W. Mack. Eng. N. R. Feb. 7, '24.

b. Hydraulics

2. Physical Hydraulics

Eine allgemeine Geschwindigkeitsformel für natürliche Wasserläufe.* (A General Velocity Formula for Natural Water Courses.) R. Winkel. Z. d. Bauver. Dec. 26, '23.

3. Industrial Hydraulics

Hydro-Electric Plant, Pacific Mills, Ltd.* G. S. Barry. Can. Engr. Jan. 22, '24.

Assembling Heavy Hydraulic Units in Plant at Bombay.* Eng. N. R. Feb. 21, '24.

Installation d'Accumulation d'Energie Hydraulic des Manufactures Hartmann, a Munster (Haut-Rhin).* (Plant for Accumulating Hydraulic Energy at the Hartmann Mills, at Munster (Upper Rhine). Gen. Civ. Jan. 12, '24.

Kurzer Bericht uber die Druckstollen-Versuche der S. B. B.* (Brief Report on the Pressure Tunnel Experiments of the Swiss Government Railways.) A. Schrafl. Schw. Bauz. Serial beginning Jan. 5, '24.

Extra-Schnelläufer-Turbinen der A.-G. der Maschinenfabrik von Th. Bell & Cie., Kriens.* (Extra High-Speed Turbines of the A. G. Maschinenfabrik von Th. Bell & Cie., Kriens.) F. Prasil. Schw. Bauz. Serial beginning Jan. 5, '24.

c. Pneumatics

3. Industrial Hydraulics

Die Verwendung von Windrädern zur Fortbewegung von Schiffen, insbesondere gegen den Wind.* (The Use of Windwheels for Moving Ships, Especially Against the Wind.) Z. d. Bauver. Dec. 26, '23.

Ein neues Regelverfahren für Windkraftwerke.* (A New Method of Regulation for Wind-Power Works.) R. Bosselmann. Ver. deu. Ing. Jan. 19, '24.

C. Materials of Construction and General Processes

a. Lime, Cement, Mortar, Concrete, Brick, Bitumen, etc.

Behavior of Concrete Exposed to Atmospheric Conditions.* P. J. Freeman. A. S. T. M. Vol. 23, '23, Pt. 2.

Behavior of Concrete Exposed to Sea Water. S. C. Hollister. A. S. T. M. Vol. 23, '23, Pt. 2.

Fatigue of Mortar.* R. B. Crepps. A. S. T. M. Vol. 23, '23, Pt. 2.

An Investigation in the Use of Calcium Chloride as a Curing Agent and Accellerator of Concrete.* H. F. Clemmer and Fred Burggraf. A. S. T. M. Vol. 23, '23, Pt. 2.

Behavior of Mass Concrete Under Service Conditions.* Arthur P. Davis. A. S. T. M. Vol. 23, '23, Pt. 2.

The Influencing of Methods of Proportioning and Mixing. R. H. Young. A. S. T. M. Vol. 23, '23, Pt. 2.

Influence of Aggregates on the Durability of Concrete. Duff A. Abrams. A. S. T. M. Vol. 23, '23, Pt. 2.

Blast-Furnace Slag as an Aggregate in Concrete.* Raymond Harsch. A. S. T. M. Vol. 23, '23, Pa. 2.

What Properties of and Methods of Making Cement Require Further Investigation? P. H. Bates. A. S. T. M. Vol. 23, '23, Pt. 2.

Late Data on the Effect of Finer Grinding and a Higher SO_3 Content Upon the Physical Properties of Portland Cement.* P. H. Bates. A. S. T. M. Vol. 23, '23, Pt. 2.

Behavior of Concrete Exposed to Akaline Conditions. G. M. Williams. A. S. T. M. Vol. 23, '23, Pt. 2.

A Penetration Test for the Workability of Concrete Mixtures with Particular Reference to the Effects of Certain Powdered Admixtures.* A. S. T. M. Vol. 23, '23, Pt. 2.

Symposium on Consistency. A. S. T. M. Vol. 23, '23, Pt. 2.

Sea Water Damages Structures. (From *The Surveyor.*) Can. Engr. Jan. 22, '24.

Concreting During Cold Weather. G. V. W. Griffiths. Inst. Mun. & Co. Eng. Jan. 29, '24.

Making Quality Products Economically.* E. W. Dienhart. Cem. Eng. Feb., '24.

Ueber die Einwirkung von Verunreinigungen im Sand auf die Betonfestigkeit.* (On the Influence of Impurities in the Sand on the Strength of Concrete.) Richard Grün. Z. d. Bauver. Jan. 2, '24.

b. Metals

Die Eigenschaften von Stahlformguss.* (Properties of Steel Castings.) P. Oberhoffer. Ver. deu. Ing. Dec. 22, '23.

c. Preservation and Use of Materials. Painting, Waterproofing

Report of Committee D–8 on Waterproofing Materials.* A. S. T. M. Vol. 23, '23, Pt. 2.

A Fungus Bed Test of Wood Preservatives.* Cloyd M. Chapman. A. S. T. M. Vol. 23, '23, Pt. 2.

Experience and Test Results in Wood Preservation. Eng. N. R. Feb. 7, '24

g. Execution of Works. Specifications

2. of Concrete

Building Concrete Structures in Winter.* (From *Bulletin* issued by Portland Cement Assoc.) Can. Engr. Jan. 22, '24.
Structural Alterations in a Concrete Building.* S. E. Bergenblit. Eng. N. R. Jan. 31, '24.
Designing Swimming Pools with Reference to Operation and Sanitation. Jack J. Hinman. (Paper read before Iowa Eng. Soc.) Mun. & Co. Eng. Feb., '24.
The Concrete Stave and Its Possibilities.* W. G. Kaiser. Cem. Eng. Feb., '24.

x. Miscellaneous

Die Standsicherheitsnormen im Hochbau. (Standards for Foundation Safety in High Buildings.) R. Saliger. Oest. Ing. Arch. Ver. Jan. 25, '24.

h. Foundations

Characteristics of Quicksand and Other Soils Met in Ordinary Excavation. Chas. R. Gow. Bost. Soc. C. E. Feb., '24.
Bell-Base Cylinder Piers for a Heavy Warehouse.* Ralph H. Chambers. Eng. N. R. Feb. 14, '24.

k. Tunnels and Tunneling-Shields

Country's Longest Tunnel Project Well Under Way.* Ry. Rev. Jan. 26, '24.

x. Miscellaneous

Drehschwingungsfestigkeit und Schwingungs-Dampfungsfähigkeit von Baustoffen.* (Resistance to Torsional Vibrations and Capacity for Damping Vibrations of Building Materials.) Otto Föppl. Schw. Bauz. Jan. 12, '24.
Baustoffnormung. (Standardization of Building Materials.) Ottokar Stern. Oest. Ing. Arch. Ver. Jan. 25, '24.

D. Highways

c. Construction

Some Relations Between the Characteristics of Straight Distilled Tar Residues.* J. W. Kennedy. A. S. T. M. Vol. 23, '23, Pt. 2.
The Road Beautiful. J. L. Redfern. Inst. Mun. & Co. Engrs. Jan. 15, '24.
Status of Provincial Highways, Quebec. J. L. Boulanger. Can. Engr. Jan. 29, '24.
Reinforcement Checks Cracking of Concrete Pavements.* W. S. Edge. Eng. N. R. Jan. 31, '24.
Notes on Concrete Roads. H. Stapleton Graves. Inst. Mun. & Co. Engrs. Jan. 29, '24.
Controlling Distant Units in a Highway Construction Organization. O. L. Kipp. (Paper read before Am. Road Builders' Assoc.) Mun. & Co. Eng. Feb., '24.
Relation of the Subgrade to Wearing Surface of Roads and Pavements. Will P. Blair. (Paper read before Illinois Soc. Engrs.) Mun. & Co. Eng. Feb., '24.
The Banff-Windermere Highway.* J. M. Wardle. Eng. Inst. Can. Feb., '24.
Roughness as a Factor in Pavement Life.* A. T. Goldbeck. Eng. & Contr. Feb. 1, '24.
Control of Distant Units in Road Construction. O. M. Kipp. Eng. & Contr. Feb. 1, '24.
Sand-Asphalt Pavement Construction.* E. R. Olbrich. (From paper read before Am. Road Builders' Assoc.) Eng. & Contr. Feb. 6, '24.
Economical Road Surfacing in a Sparsely Populated Semi-Arid Territory.* J. L. Thayer. Eng. & Contr. Serial beginning Feb. 6, '24.
Construction of Bituminous Macadam Roads.* R. W. Coburn. (Paper read before Northeastern Section, Am. Soc. C. E.) Can. Engr. Feb. 12, '24.
Advantages of Reinforcing Concrete Roads. H. Eltinge Breed. Can. Engr. Feb. 12, '24.
Rebuilding a Section of Street Railway at Milwaukee.* Eng. N. R. Feb. 21, '24.

d. Maintenance

Use of Air Bath in Determination of Solid Residue of Road Oils at 100 Penetration.* H. F. Clemmer and H. C. Helmle. A. S. T. M. Vol. 23, '23, Pt. 2.
Behavior of Concrete in Roads. A. T. Goldbeck. A. S. T. M. Vol. 23, '23, Pt. 2.
Methods of Repairs and Maintenance of Roads in Scotland.* W. L. Gibson. Inst. Mun. & Co. Engrs. Jan. 29, '24.
Central Plant Highway Maintenance—Possibilities for Large Concentrated Mileage. Leroy C. Smith. (Paper read before Am. Road Builders' Assoc.) Mun. & Co. Eng. Feb., '24.

e. Street Cleaning, Dust Prevention, Snow Removal

Organization, Methods and Equipment for Snow Removal. Edward E. Reed. (Paper read before Am. Road Builders' Assoc.) Mun. & Co. Eng. Feb., '24.

h. Vehicles. Automobiles. Traffic

The Evolution of the Road and Transport Thereon.* F. Marsden. Inst. Mun. & Co. Engrs. Jan. 15, '24.
Methods and Costs of Making Traffic Surveys. George E. Hamlin. (Paper read before Am. Road Builders' Assoc.) Mun. & Co. Eng. Feb., '24.
The Motor Road from Haifa to Acre in Palestine.* P. W. Etkes. Eng. N. R. Feb. 21, '24.
Report of Committee D-4 on Road and Paving Materials.* A. S. T. M. Vol. 23, '23, Pt. 1.
Local Materials for Pavements. Roy M. Green. Can. Engr. Jan. 22, '24.
Highway Research in Illinois.* Clifford Older. Am. Soc. C. E. Feb., '24.

E. Bridges, Viaducts, and Arches

b. Iron or Steel Bridges and Viaducts

Sur le Calcul des Arcs Encastrés dans un Troisieme Cas.* (On the Computation of Two-Hinged Arches.) M. Legay. Ann. P. et C. Sept.–Oct., '23.

d. Concrete and Reinforced Concrete Bridges and Viaducts

Analysis of the Stresses in the Ring of a Concrete Skew Arch.* J. Charles Rathbun. Am. Soc. C. E. Feb., '24.

Building a Concrete Arch Around An Old Iron Bridge.* E. H. Harder. Eng. N. R. Feb. 21, '24.

Types Officiels Espagnols de Ponts en Bèton Armé pour Routes et Chemins Vicinaux.* (Spanish Official Types of Reinforced Concrete Bridges for Highways and Local Roads.) J. Eugenio Ribera. Gen. Civ. Jan. 12, '24.

Le Pont Pasteur, en Bèton Armé, sur le Rhône, a Lyon.* (The Pasteur Bridge of Reinforced Concrete, over the Rhone at Lyons.) Gen. Civ. Jan. 19, '24.

f. Suspension Bridges. Transfer Bridges

Philadelphia-Camden Suspension Bridge.* Ralph Modjeski. Can. Engr. Feb. 5, '24.

x. Miscellaneous

Outstanding Problems in Highway Bridge Design.* E. F. Kelley. Eng. & Contr. Feb. 1, '24.

Normung im Brückenbau. (Standards in Bridge Building.) Karl Haberkalt. Oest. Ing. Arch. Ver. Jan. 25, '24.

F. Inland Waters

b. Canals (General Articles)

Normung auf dem Gebiete des Kanalisationswesens. (Standardization in the Field of Pipe Systems.) W. Voit. Oest. Ing. Arch. Ver. Jan. 25, '24.

c. Regulation of Waterways—Volume of Discharge, Freshets, Floods, Soundings

Levees on Mississippi Tend to Lower River Bed.* Charles L. Potter. Eng. N. R. Feb. 14, '24.

d. Diverting Dams. Locks. Lifts. Elevators. Inclined Planes

Turning the Yellow River Back Into Its Channel.* Eng. N. R. Feb. 7, '24.

j. River and Lake Ports, Equipment

Die Schiffahrtstrassen und Hafenanlagen Berlins.* (The Navigation Routes and Harbor Works of Berlin.) Leonhard Adler. Oest. Ing. Arch. Ver. Dec. 21, '23.

G. Maritime Works

b. Management and Protection of the Ocean

Ocean Beach Esplanade, San Francisco, California. Discussion: Lynn Perry. Am. Soc. C. E. Feb., '24.

c. Vessels and Maritime Navigation. Lighthouses and Buoys. Various Signals

The Subdivisions of Passenger Ships.* (Paper read before Inst. Engrs. & Shipbuilders in Scotland.) J. Foster King. Eng. Feb. 1, '24.

d. Roads and Outer Harbors. Dikes and Jetties. Breakwaters

Essai sur les Digues Maritimes Verticales.* (Test of Vertical Marine Dikes.) M. Benezit, Ann. P. et C. Sept.–Oct., '23.

e. Navigation Locks

Les Portes à Secteurs de l'Écluse Maritime du Canal de Södertälje (Suède).* (The Sector Gates of the Sea Lock of the Södertälje (Sweden) Canal.) Gen. Civ. Dec. 29, '23.

f. Maritime Rivers and Canals—Bank Protection

Les Crues de la Seine en Janvier 1924 et 1910. Les Travaux de Protection Exécutés à Paris et dans la Région Parisienne depuis 1910.* (The Floods of the Seine in January 1924 and 1910. Protective Works Built at Paris and in the Parisian Region Since 1910.) A. Bidault des Chaumes. Gen. Civ. Jan. 26, '24.

g. Dredges and Dredging. Force Pumps. Refloating and Removing Wrecks. Ice-Breakers

Le Renflouement des Navires Coulés par le Système Reno.* (The Raising of Sunken Ships by the Reno Method.) Gen. Civ. Jan. 12, '24.

h. Wharves. Mooring Buoys. Harbor Equipment

Nigerian Port Improvements.* Dock & Harbour Feb., '24.

Warehousing as a National Asset.* Marshall Stevens. (From paper read before Inst. of Transport.) Dock & Harbour Feb., '24.

Ducs d'Albe avec Fondation et Beton Arme, au Port de Rotterdam.* (Fender Piles with Reinforced-Concrete Foundations, at the Port of Rotterdam.) Gen. Civ. Jan. 5, '24.

I. Harbors (General Articles)

The Port of Hobart, Tasmania, and Its Projected Development.* J. Adams. Dock & Harbour Feb., '24.
Die Wiener Donauhafenfrage. (The Vienna Danube Port Question.) Oest. Ing. Arch. Ver. Dec. 21, '23.

j. Dockyard Machinery and Shipyards. Dry Docks

Coaling Facilities at Tyne Ports.* Dock & Harbour Feb., '24.
Les Chantiers de Couëron (Loire-Inférieure) de la Compagnie Générale de Constructions Navales.* (The Coueron (Loire-Inferieure) Shipyards of the Compagnie General de Constructions Navales.) Gen. Civ. Jan. 5, '24.

H. Railroads. Street and Interurban Railways. Automobiles. Aeronautics

a. General Articles

1. General Articles

The Rock Island System of Locomotive Scheduling and Production Control as in Operation at Silvis Shops.* Laurence C. Bowes. West. Ry. Club Dec., '23.
Santa Fé Railway Builds Low-Grade Line in Kansas.* Eng. N. R. Feb. 14, '24.

4. Track

A New System of Track-Circuiting for Railways. (From *Railway Gazette.*) Int. Eng. Cong. Assoc. Jan., '24.
Frisco Makes Important Line Improvements.* Ry. Age Jan. 26, '24.
Southern Pacific Extends Its Mexican Line.* Ry. Age Jan. 26, '24.
The Financial Aspect of Tie Preservation. H. S. Sackett. Ry. Age Feb. 16, '24.
Efforts Horizontaux Alternatifs Produits par des Charges Roulantes sur une Voie à Deux Rails en Alignement Droit.* (Alternating Horizontal Stresses Produced by a Rolling Load on a Two-Rail Track in Straight Alignment.) F. Chaudy. Gen. Civ. Dec. 29, '23.

5. Signals and Safety Apparatus

Improvement of Air Apparatus in Train Control.* Ry. Age Feb. 16, '24.
Protection des Agents contre les Gaz Toxiques des Souterrains.* (Protection of Agents Against the Toxic Gases of Underground Ways.) M. Quinquet. Rev. Gen. Jan., '24.

6. Rolling Stock (Locomotives, Cars)

Railway Gauges.* Lionel Wiener. Int. Ry. Cong. Assoc. Jan., '24.
Electric Locomotive for the Imperial Japanese Railways.* Eng. Jan. 25, '24.
Mikado Type Locomotive for Canadian National.* Ry. Age Jan. 26, '24.
Pennsylvania Builds Three Electric Locomotives.* T. C. Wurtz. Ry. Age Jan. 26, '24.
Designing Locomotives for Service Requirements.* Ry. Rev. Jan. 26, '24.
Tentative Standard Electric Locomotive, P. R. R.* T. C. Wurtz. Ry. Rev. Jan. 26, '24.
The Preparation and Use of Velocity Profiles.* V. I. Smart. Ry. Rev. Feb. 2, '24.
Long Locomotive Runs on the Norfolk & Western Ry.* A. C. Needles. Ry. Rev. Feb. 2, '24.
Heavy 4–8–2 Type Southern Pacific Locomotives.* Ry. Age Feb. 9, '24; Ry. Rev. Feb. 9, '24.
Heavy Santa Fe Locomotives for B. & O.* Ry. Age Feb. 16, '24.
Decapod Locomotive for G. M. & N. R. R.* Ry. Rev. Feb. 23, '24.
New Tank Cars for Canadian Service.* Ry. Rev. Feb. 23, '24.
Ventilation and Heating of Railway Passenger Cars.* K. F. Nystrom. (Paper read before Can. Ry. Club.) Ry. Rev. Feb. 23, '24.
Nouveau Compresseur d'Air Westinghouse pour Locomotives.* (New Westinghouse Air Compressor for Locomotives). J. Netter. Gen. Civ. Dec. 29, '23.
Le Developpement des Chemins de Fer et l'Evolution de la Locomotive a Grande Vitesse.* (The Development of Railroads and the Evolution of the High Speed Locomotive.) Maurice Demoulin. Gen. Civ. Serial beginning Jan. 19, '24.
Ein führung des elektrischen Betriebes auf der Wiener Stadtbahn.* (Installation of Electric Power on the Vienna Municipal Railroad.) Musil. Oest. Ing. Arch. Ver. Jan. 11, '24.
Die Siemens-Schuckert-Lokomotiven auf der schwedischen Riksgränsbahn.* (Siemens-Schuckert Locomotives on the Swedish Riksgräns Road.) F. Kuntze. Ver. deu. Ing. Jan. 26, '24.

7. Use of Electricity

Hochbauten der Unterwerke der elektrifizierten Gotthardstrecke der S. B. B.* (Buildings of the Electrified Gotthard Section of the Swiss Government Railways.) Schw. Bauz. Jan. 5, '24.

8. Stations. Engine Houses. Shops

Progress on the Union Station at St. Paul, Minn.* Eng. N. R. Jan. 31, '24.
England's First Reinforced Concrete Enginehouse.* D. R. Lamb. Ry. Age Feb. 2, '24.
New C. & O. Ry. Yard at Clifton Forge, Va.* Ry. Rev. Feb. 9, '24.
Clifton Forge Terminal Involves Heavy Work.* Ry. Age Feb. 9, '24.
The Reading Builds Model Oil Storehouse.* Ry. Age Feb. 9, '24.
Model Oil House of Reinforced Concrete, P. & R. Ry.* R. J. Stackhouse. Ry. Rev. Feb. 16, '24.
New Engine Terminal at Peach Creek, W. Va.* Ry. Rev. Feb. 16, '24.
Santa Fe is Building Large Terminal in Dallas.* Ry. Age Feb. 16, '24.
Large Terminal and Cold-Storage Warehouse at Duluth.* Eng. N. R. Feb. 21, '24.
Illinois Central Builds Large Yard at Chicago.* Ry. Age Feb. 23, '24.
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Nouvel Atelier de Chaudronnerie des Chemins de Fer d'Alsace et de Lorraine a Bischeim.* (New Boiler Works of the Railroads of Alsace and Lorraine at Birschheim.) M. Oudet. Rev. Gen. Jan., '24.
Organisation de l'Entreposage et des Transports Frigorifiques sur le Réseau P.-L.-M.* (Organization of Warehousing and Refrigerator Car Service on the P.-L.-M.) M. H. Lenoir. Rev. Gen. Jan., '24.

9. Technical and Commercial Use

Utilizing the Motor Truck in Freight Traffic.* Ry. Age Feb. 2, '24.

d. Street Railways, Elevated Railways, Subways

6. Traction

Bemerkungen zum elektrischen Betriebe der Wiener Stadtbahn.* (Remarks on the Electrical Operation of the Vienna Municipal Railroad.) Franz Musil. Oest. Ing. Arch. Ver. Jan. 11, '24.

e. Automobiles

3. Electric Automobiles

Les Essais Controlès de Véhicules a Traction Electrique par Accumulateurs (25 Septembre–10 Octobre 1923).* (The Verified Trials of Storage-Battery Vehicles (25 September–10 October 1923.) Ch. Dantin. Gen. Civ. Dec. 29, '23.

f. Aeronautics

1. General Articles

Some Materials in Aircraft Construction. John D. North. (Paper read before Royal Aeronautical Society.) Eng. Jan. 25, '24.

L'Etude Aérodynamique des Ailes d'Oiseaux et des Voilures Souples.* (The Aerodynamic Study of the Wings of Birds and of Flexible Aerofoils.) Gen. Civ. Jan. 26, '24.

x. Miscellaneous

Materials in Aircraft Construction.* Leslie Aitchison. (Paper read before Royal Aeronautical Soc.) Eng. Jan. 18, '24.

I. Municipal Water-Works. Agricultural Engineering

a. General Articles

Operating Headquarters of the Philadelphia Water-Works.* Seth M. Van Loan. Eng. N. R. Jan. 31, '24.

b. Hydrology—Water Resources

The Somerford Pumping Station, South Staffordshire Waterworks Company.* (Abstract of paper read before Inst. Water Engrs.) Frederic John Dixon. Eng. Feb. 1, '24.

A Large English Bored Well.* Frederic John Dixon. (Paper read before Inst. Water Engrs.) Eng. & Contr. Feb. 13, '24.

c. Dams and Reservoirs

Worcester's Reservoirs, Present and Proposed. George W. Batchelder. N. E. W. W. Assoc. Dec., '23.

Filtration of Burlington's Water Supply. O. A. Canning. N. E. W. W. Assoc. Dec., '23.

The Care of Large Watersheds. Frederic I. Winslow. N. E. W. W. Assoc. Dec., '23.

Detail of the Failure of an Italian Multple-Arch Dam.* Eng. N. R. Jan. 31, '24.

Improved Type of Multple-Arch Dams. Discussion: L. F. Harza and L. Standish Hall. Am. Soc. C. E. Feb., '24.

The Lake Mentz Dam on Sundays River.* Engr. Feb. 1, '24.

Alcona Dam on Au Sable River.* William W. Tefft. Power Feb. 5, '24.

Building the Highest Hydraulic Fill Dam.* A. C. Eaton. Eng. N. R. Feb. 7, '24.

The Hartebeespoort Dam, Pretoria, South Africa.* Eng. & Contr. Feb. 13, '24.

Failure of the Gleno Dam in Italy.* Giovanni Rodio. Eng. & Contr. Feb. 13, '24.

Completing the Jim Falls Hydro-Electric Development.* A. J. Hammond. Eng. N. R. Feb. 14, '24.

Failure of a Concrete Reservoir of Curious Design.* J. C. Pinney. Eng. N. R. Feb. 14, '24.

Der Bruch der Gleno-Talsperre in Norditalien.* (The Failure of the Gleno Dam in Northern Italy.) Ludin. Z. d. Bauver. Jan. 9, '24.

Die Talsperrenkatastrophe in Norditalien. (The Dam Catastrophe in Northern Italy.) Oest. Ing. Arch. Ver. Jan. 11, '24.

d. Analysis and Purification of Water

Rapid Sand Filtration at Cambridge at Cambridge, Mass.* George A. Johnson. N. E. W. W. Assoc. Dec., '23.

Direct Oxidation Tests at Toronto.* F. A. Dallyn & Others. Can. Engr. Feb. 19, '24.

e. Distribution of Water

The Cause and Effect of Range-Boiler Explosions.* William A. Bradford. N. E. W. W. Assoc. Dec., '23.

Eliminating Water Hammer From a High-Pressure Regulating Valve.* Sydney Lee Ruggles. N. E. W. W. Assoc. Dec., '23.

Hydrant Connections for Fire Engines.* Frank A. Marston. N. E. W. W. Assoc. Dec., '23.

Lethbridge Northern Irrigation District in Alberta.* C. M. Arnold and H. G. Cockrane. Eng. N. R. Feb. 7, '24.

The New Water Works Pumping Plant for Tully, N. Y. Louis Mitchell. Eng. & Contr. Feb. 13, '24.

The Corrugation Method of Irrigation. Eng. & Contr. Feb. 13, '24.

Studies of Outlets and Crops on Sewage Irrigated Areas.* George A. Mitchell. Eng. N. R. Feb. 14, '24.

f. Drainage of Land

Depth and Spacing of Tile Drains for Farm Lands. Emile G. Minder. Eng. N. R. Feb. 21, '24.

J. Sewerage. Sewage and Refuse Disposal

a. Sewers and Drains

The Design of Relief Sewers. A. W. Consoer. (Paper read before Illinois Soc. of Engrs.) Mun. & Co. Eng. Feb., '24.

b. Sewage Disposal. Purification

New Sanitary District of Elgin Has Large Program.* Eng. N. R. Jan. 31, '24.
Hygienic Aspects of Use of Sewage Sludge as Fertilizer.* Abel Wolman. (From Special Report to State Board of Health of Maryland.) Eng. N. R. Jan. 31, '24.
Operating Results of Baltimore Sewage-Works.* C. E. Keefer. Eng. N. R. Feb. 7, '24.
Direct Oxidation Tests at Toronto.* F. A. Dallyn. Can. Engr. Feb. 19, '24.
Die Schlammentleerung der Klärbecken mittels Saugbaggers.* (Slime Removal from Clarifying Basins by Means of Suction Dredges.) Paul Miara. Gesund. Ing. Jan. 19, '24.

c. Refuse Disposal

Garbage Incinerator Program at St. Louis Has Setback.* Eng. N. R. Feb. 21, '24.
Ueber Müllverwertung im Haushalt. (On Rubbish Utilization in the Home.) Fromme. Gesund. Ing. Jan. 5, '24.

K. Heat Engines

a. Steam Engines. Boilers

More Steam-Engine Power Without Steam.* Ismar Ginsberg. Sci. Am. Mar., '24.
Rohrleitungen und Armaturen für Dampfdrücke bis 100 at und 450 C.* (Piping and Fittings for Steam Pressures up to 100 at. and 450 C.) Franz Seiffert. Ver. deu. Ing Dec. 22, '23.
Der heutige Stand des Höchstdruckdampfbeitriebes für ortfeste Kraftanlagen in der verscheidenen Industrieländern.* (The Present Situation of Highest-Pressure Steam Operation for Stationary Power Plants in the Different Industrial Countries.) O. H. Hartmann. Ver. deu. Ing. Dec. 29, '23.
Höchstdruck und Energiewirtschaft.* (High Pressure and Power Economy.) H. Gleichmann. Ver. Deu. Ing. Dec. 29, '23.
Hochdruck und Hochüberhitzung.* (High pressure and High Superheating.) W. G. Noack. Ver. deu. Ing. Dec. 29, '23.
Die Kesselbaustoffe.* (Materials for Boiler Construction.) P. Goerens. Ver. deu. Ing. Jan. 19, '24.

b. Steam Turbines

Leistungsversuche an einer Gegendruckturbine der ersten Brünner Maschinenfabriks-Gesellschaft in der Nestomitzer Zuckerraffinerie in Nestomitz a. E.* (Performance Tests of a Reaction Steam Turbine of the Erste Brünner Maschinenfabriks-Gesellschaft in the Nestomitz Sugar Refinery at Nestomitz a. E.) E. Josse and A. Stodola. Ver. deu. Ing. Dec. 29, '23.
Eigenschaften und Verwertung von Hoch- und Höchstdruckdampf.* (Properties and Utilization of High-Pressure and Highest-Pressure Steam.) E. Josse. Ver. deu. Ing. Jan. 26, '24.

c. Gas and Oil Engines

Oil Engines Practical Even if Process Steam Be Needed.* J. S. Le Clercq. Power Feb. 26, '24.

L. Electricity

b. Distribution and Transmission of Electricity

1. Power Plants

The Emmet Mercury Vapour Plant.* Engr. Jan. 18, '24.
The Turbines at Raanaasfoss Power Station, Norway.* Hallgrim Thoresen. Engr. Serial beginning Jan. 18, '24.
Steel Point Station at Bridgeport.* W. F. Thompson. Power Feb. 12, '24.
L'Usine Hydro-Electrique Drac-Romanche a Pont-de-Claix (Isère). Reccordement de la Conduite d'Amenée avec l'Usine.* (The Drac-Romanch Hydro-Electric Plant at Pont-de-Claix (Isère). Connection of the Supply Pipe to the Plant.) Paul Dufour. Gen. Civ. Jan. 5, '24.

2. Long-Distance Transmission of Energy

Comparative Data on Towers for High Tension Transmission.* Walter Dreyer. Eng. N. R. Jan. 31, '24.

d. Mechanical Uses of Electricity

2. Servomotors, Hoists, Elevators, Handling Machinery

Essais d'un Trottoir Roulant Electrique, a Traction Tangentielle, a Jersey-City (Etats-Unis).* (Trials of an Electric Moving Sidewalk with Tangential Traction, at Jersey City (United States).) Gen. Civ. Jan. 19, '24.

f. Signals and Communication

Army Engineers Build Disappearing Searchlight Towers.* E. D. Cummings. Eng. N. R. Feb. 7, '24.

L'Alimentation des Postes Récepteurs de Radiophonie par le Courant Alternatif des Secteurs Electriques.* (Supplying Radiophone Receiving Stations from the Alternating Current of Electric Supply Systems.) Gen. Civ. Jan. 19, '24.

x. Miscellaneous

Elektrizitätsverwertung für thermische Zwecke und Folgerungen betreffend den Energie-Export.* (Utilization of Electricity for Heating and Results with Respect to the Exportation of Power.) J. Bertschinger. Schw. Bauz. Jan. 5, '24.

M. Architecture

b. Business and Commercial Buildings

New Building for Henry Morgan & Co.* Can. Engr. Jan. 29, '24.

c. Residences, Hotels

Concrete Art Stone for Residences.* J. R. Newman. Cem. Eng. Feb., '24.
Reinforced-Concrete Hotel Under Construction Fails by Progressive Collapse.* T. L. Condron. Eng. N. R. Feb. 7, '24.

d. Storage Buildings

Square and Triangular Cement Storage Warehouses.* Eng. N. R. Jan. 31, '24.

f. Factories and Mill Buildings

The Settlement and Righting of a Factory Building in Holland.* Eng. Feb. 8, '24.
New Machine Shop for Ford Motor Co.* Can. Engr. Feb. 12, '24.

g. Other Buildings

Grandes Eglises Voûtees en Beton Armé. (Large Vaulted Churches of Reinforced Concrete.) V. Sabouret. Gen. Civ. Jan. 5, '24.

h. Roofs, Domes

Konstruktives von der Haupthalle des Amtsgerichts Berlin-Mitte.* (Constructive Forms from the Main Hall of the Berlin-Mitte Police Court.) O. Leitholf. Z. d. Bauver. Serial beginning Jan. 16, '24.

x. Miscellaneous

L'Utilité d'Isoler les Murs de leurs Fondations par des Matériaux Imperméables. (The Advantage of Insulating Walls from their Foundations by Waterproofing Substances.) Gen. Civ. Dec. 29, '23.
Der Barock in der Deutschordensresidenz Ellingen.* (Barocque in the Ellingen German Order Residence.) Arthur Schlegel. Z. d. Bauver. Dec. 5, '23.
Baukunst und Landschaft in China.* (Architecture and Scenery in China.) Ernst Boerschmann. Z. d. Bauver. Serial beginning Jan. 2, '24.
Wir und die Architektur des Auslandes.* (We and Foreign Architecture.) Armin Meili. Schw. Bauz. Serial beginning Jan. 5, '24.

O. Administration. Legislation. Economics. Statistics

a. General Legislation

Les Applications Jurisprudentielles de la Loi du 16 Octobre 1919 sur l'Utilisation de l'Energie Hydraulique. (Jurisprudential Applications of the Law of October 16, 1919, Regarding the Utilization of Water Power.) Achille Mestre. Gen. Civ. Jan. 26, '24.

b. Economic Question of a General Character; Valuations, etc.

The Costs of a Consulting Engineering Practice.* Engr. Feb. 1, '24.
Municipal Finance and Improvement Policies.* H. G. McGee. Eng. N. R. Feb. 7, '24.

d. Administrative and Financial Management of Means of Communications

5. Railroads and Street Railways

The Proposed Operating Expense Classification. Ry. Age Feb. 16, '24.

g. Engineering Education

Die Universitäten und Technischen Hochschulen Chinas. (The Universities and Technical High Schools of China.) R. Plank. Ver. deu. Ing. Jan. 26, '24.